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BETTER FRUIT

VOLUME XIV

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FEATURES IN THIS ISSUE:

Filberts in the Northwest
Fruit Growing and Coöperation
Northwest Fruitmen Confer
Financing Horticulture
Codling Moth Extermination
American Fruits in England

Brodie D A
Dept. of Agriculture
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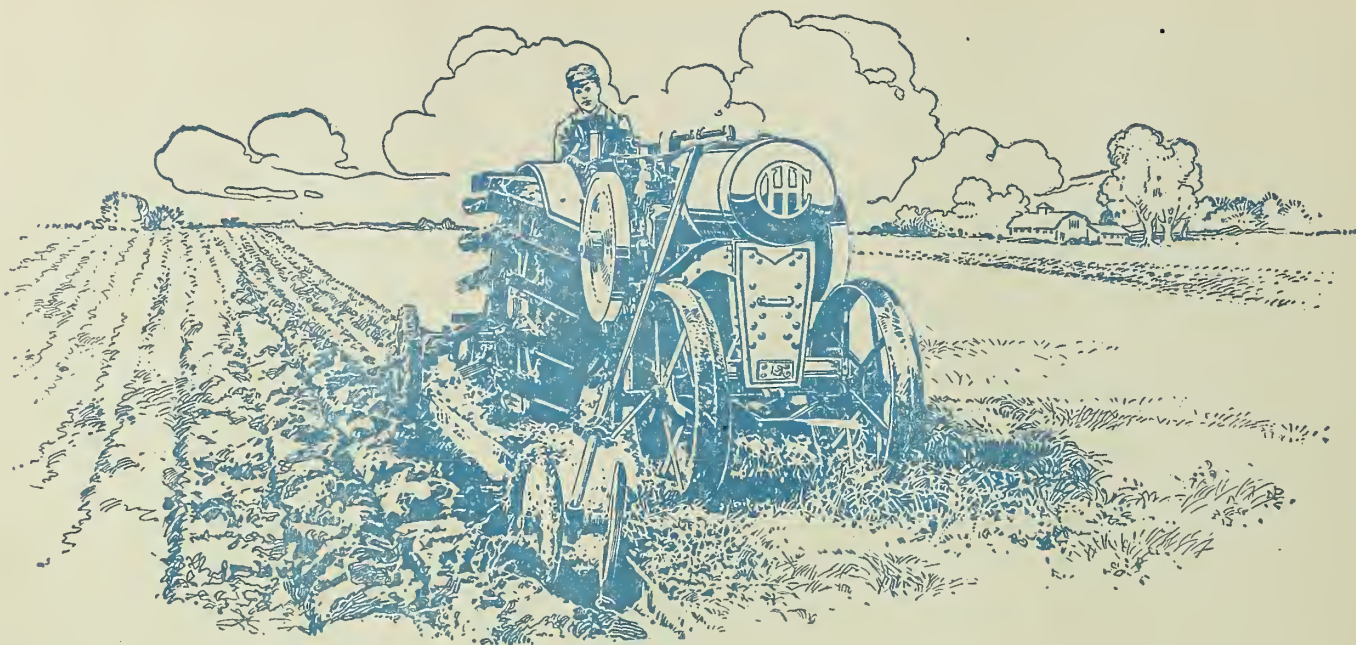
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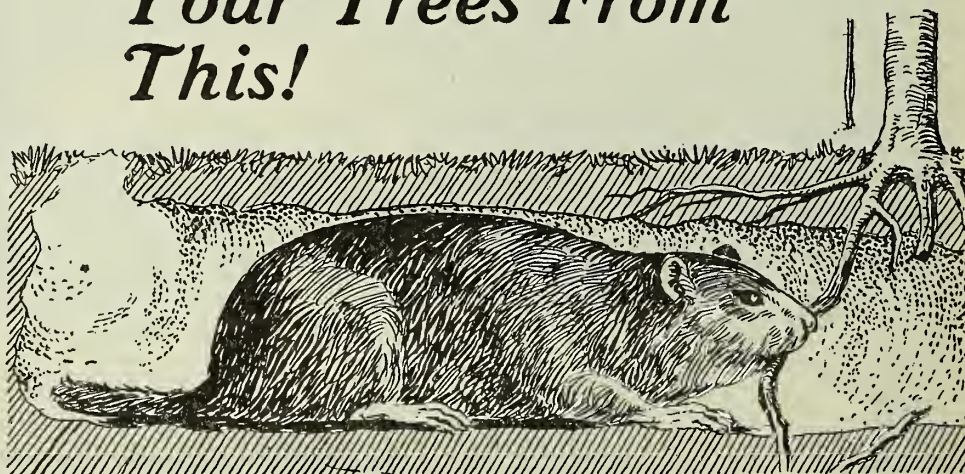
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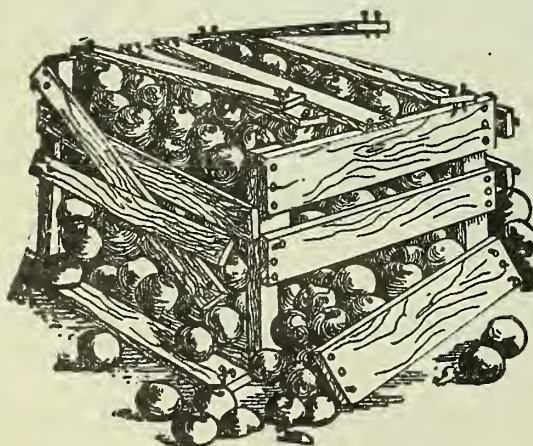


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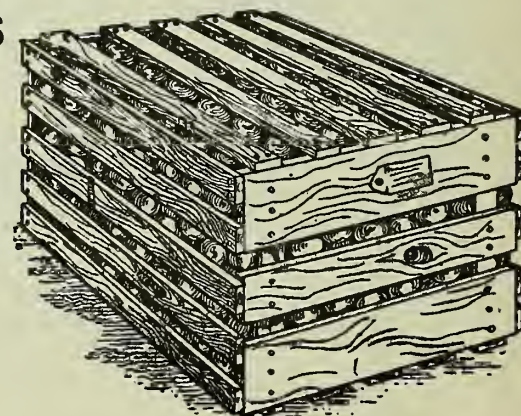
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The Cultivation of the Filbert in the Northwest

By Knight Percy, Salem, Oregon

THE names of Gillette, Quarnberg and Dorris stand out head and shoulders among those who have contributed towards the development of the filbert industry in the West. Felix Gillette, of Nevada City, California, introduced and tried out many varieties of filberts, as well as walnuts, from France, his native country. He propagated them and disseminated the most promising of the varieties, and today

had sufficient faith in the filbert to make a real planting. While he started with filberts a number of years after Quarnberg did, he is nevertheless as much of a pioneer as is the Vancouver man, in that he knew nothing of the results of the latter when he made his planting. His results have been such that he has increased his acreage from year to year until he is probably the largest commercial grower in America, and he has

this fungus. The cultivated filbert of commerce, which is a European cousin to our American hazels, however, has never had the opportunity to build up strains immune to this American fungus, and shows little resistance to it. The wild hazel growing in Western America is of a different species than that of Eastern America and is not a host to the filbert blight, hence the cultivated filbert is grown here without danger of



View in Oregon filbert orchard, showing filbert bush in foreground being trained to tree form. The young limbs around the trunk of the tree are being left to provide material for new plantings.



Filberts in the same orchard showing the bush form. Both of these illustrations show that, while the trees are young, they are making a good growth and are in fine condition.

most of the plantings of the Northwest trace their origin to these early importations of this nut-loving Frenchman.

A. A. Quarnberg, of Vancouver, Washington, is a tree lover with an experimental turn of mind, with an especial leaning towards nuts. He early got in touch with Gillette and carried on an extensive correspondence with him, in addition to buying many varieties of nut trees, which he set out in his experimental grounds at Vancouver. In 1894 Quarnberg planted the first DuChilly filberts in the Northwest, and since that time has tried out perhaps thirty varieties of this nut. While he made no extensive plantings he has made an extensive study of varieties and his writings and talks on the subject have been the inspiration of many plantings.

George Dorris, of Springfield, Oregon, was the first grower in the West who

what would be considered a small grove at that, when compared with other nut plantings.

For over a hundred years attempts have been made to establish filbert growing in the Eastern states of this country, but no planting has ever been able to make a permanent stand. Many growers there have been able to get trees to live for a number of years and have often got into print with the announcement that they have solved the problem of growing the filbert under their conditions, but sooner or later the deadly filbert blight has killed them off. This blight is a fungous disease that is present on the wild hazel of Eastern America, on which, however, it does little damage, due to the fact that through centuries of "natural selection" a strain of hazels has developed that is more or less immune to the ravages of

extinction from that blight. Growers in the West, however, should take care that this fungus is not introduced here, as it may be by introducing filbert bushes grown in Eastern nurseries. There should be an embargo against shipping Eastern hazel and filbert bushes into the Northwest.

The United States imported annually between 14,000,000 and 15,000,000 pounds of filberts in the pre-war period from 1900 to 1914. Turkey, Spain and Italy are the principal producing countries, although both France and Great Britain grow the nut.

Compared with other tree crops in the Northwest, the filbert acreage is very insignificant, but a study of yields and costs of production show this nut to be a very promising one for this favored region. While there are no official statistics for Oregon, the writer,

being familiar with most of the plantings in the state, ventures to estimate the acreage of filberts over six years of age at thirty-five to forty-five acres, and the total number of trees planted in orchard form in the state at from ten to twelve thousand. Production will increase rapidly during the next few years and the home grown nut will soon become known in the channels of trade.

The filbert trees are planted much closer together than most other nut trees and their yields are greater per acre, and usually they get into commercial bearing at an earlier age than do the other nuts. Among the records of yields that have come into the writer's hand the following are interesting: H. A. Kruse of Wilsonville obtained 1,400 pounds from 100 trees 9 years old; in 1918 from one and one-third acres of 13-year-old trees he reported a yield of 2,165 pounds. Fifty Barcelonas averaged 30 pounds per tree, while some of his individual trees produced as high as 50 pounds. The trees are growing on a fine silt-loam soil and are given splendid care.

A Gresham grower, whose trees are much crowded, 215 being planted on about an acre of ground, reports that in his seventh year his yield was 900 pounds and in the following two years 700 pounds.

A Vancouver grower, who planted 380 trees to the acre, spacing them 10x14 feet apart, reports a peak yield of 2,000 pounds and an average yield of about 1,000 pounds per acre.

A Salem grower with two acres of trees 6 or 7 years old that had been considerably neglected and which were allowed to grow suckers obtained 1,200 pounds in 1917 and netted \$125 per acre in 1918.

Joseph Nibler, of Woodburn, with two and one-half acres 9 years old, harvested 3,100 pounds of nuts in 1918. One thousand pounds of these came from 400 Aveline bushes. One hundred and twelve Barcelonas produced 2,000 pounds. Nibler had one 8-year-old Barcelona that yielded 35 pounds and two others 25 pounds each. His soil is the ordinary Willamette Valley loam, of which there are thousands of acres as good as his.

George Dorris, at Springfield, reports a 3-year-old tree that bore 384 nuts; a 5-year-old that produced 16 pounds; a 6-year-old, 21 pounds; a 10-year-old tree 46 pounds, and 13-year-old trees with 50 to 60 pounds. Dorris has an ideal filbert location. His soil is a rich, moist river bottom. He stated at a meeting of the Western Walnut Association that one acre of No. 1 Barcelonas, given every advantage of soil, care and pollination, should produce the following yields:

At 5 years.....	560 to 1,000 pounds
At 6 years.....	1,000 to 1,500 "
At 8 years.....	2,000 to 3,000 "
At 10 years.....	3,000 to 4,000 "
At 12 years.....	4,000 to 5,000 "

The better growers, such as Dorris, are now advising that the filbert, especially varieties such as Barcelona, be planted about 20 feet apart, which gives 108 to 125 trees per acre, depending

upon the system of planting. Small growing varieties, such as the Avelines, can be planted at 14 to 16 feet apart. However, as the different varieties are usually planted together for pollination purposes, the larger spacing should be used.

The filbert is usually propagated from suckers that grow from the root or from the underground part of the stem of the tree. Those suckers that have a few fibrous rootlets on them are transplanted to the nursery row for a year or two, when they are ready for the orchard. Layering is also practiced. This form of propagation prevents intensive cultivation of the trees and hence tells on the resulting crop of nuts. To obtain trees by this method, bend over a low-growing limb and partly cover it with dirt, leaving the tip exposed. Some growers tie this tip to a stake to insure a straight growing tree. Layering is done in the spring. One grower reports an average of sixteen salable plants or trees, using this method of propagation. Some of the more progressive nurserymen are planting seed and grafting the two-year-old roots, which gives a much more desirable form of tree. This practice will permit a more rapid expansion of the filbert acreage, which has been retarded because of scarcity of nursery stock.

There is little reliable information on the subject of filbert pollenization. No carefully controlled experiments have ever been reported. Such information as we are able to present is based on field observations of growers, where the liability of error is always present. Barcelona, which is the most widely planted variety in the West, is at least partially self-fertile. It will bear crops when isolated, but some growers are of the opinion that the yield is increased by cross pollination with certain other varieties. Dorris reports that both DuChilly and White Aveline have a beneficial effect on it. Nibler, at Woodburn, thinks that his Barcelonas among his Kentish Cob seedlings yield better than do those that are isolated. Many of the pistillate blossoms of this variety are out when the catkins are, and these are probably fertilized by their own pollen, but later, after the Barcelona catkins are all gone, still other pistillate flowers appear. It is probably the pollenization of these late blossoms by the pollen of varieties that shed their pollen later than does the Barcelona that causes the increased crop noted when this variety is planted among certain other varieties.

White Aveline is self-sterile. Dorris finds that when planted with Red Aveline and Davidiana, both red and white Avelines produce well, but whether it is the Avelines pollenizing each other or the Davidiana pollenizing them he cannot tell. For this reason he recommends that these three be planted together.

DuChilly is one of the finest nuts grown and as soon as a sure pollenizer is found for it it will be more largely planted. Several growers think they have varieties that will fertilize it, but more definite proof will have to be given before one can plunge on the

variety. With Dorris the Davidiana seems to do the work, but this combination is not the best, since no variety has yet been found to pollenize the latter variety. With him, too, the Avelines pollenize the DuChilly only to a very limited extent.

Barcelona is the safest variety to plant in the light of present knowledge. One cannot go wrong with it. As a matter of safety DuChilly should be planted with it in at least limited quantities. Barcelona is a strong grower and heavy bearer of large nuts with medium thick shells. The nuts are of good quality. The variety is quite a heavy producer of suckers when young, which is probably one of the reasons why it is so widely planted. The nut itself is large, short, compressed, thick, shell hard; husk shorter than the nut, which makes it a self-husker, a very desirable feature.

If a perfect pollenizer were to be found for DuChilly, it would probably become the most popular variety grown. It produces the largest and one of the best quality nuts of the varieties commonly grown in the Northwest. The nut is elongated, oval, broad, over an inch long and three-quarters of an inch wide. The nut is often confused with Davidiana, but is longer, flatter and more angular. The bush is less rank in growth than Barcelona, being of medium size. It is a rather shy producer of suckers.

Davidiana—This variety is not widely distributed in this section and it is doubtful whether any of the nurserymen can supply it in any quantities. Those who wish to have Davidianas in their plantings for pollenizers will do well to plant the strong growing Barcelona and later top-work Davidiana into them. Grafting wood is much more plentiful than are Davidiana suckers and the filbert is not as hard to graft as is the walnut. Scions should be cut in January and grafting done in February. A softer wax than the common walnut wax should be used in the grafting. This variety resembles to quite an extent the DuChilly in character of nut produced. The husk is nearly smooth or slightly downy, as long or longer than the nut and deeply cut; the nut is large, roundish ovate; shell pale brown and beautifully striated with dark brown lines; kernel is full and of excellent flavor. While according to Dorris' observations Davidiana has great value as a pollenizer to DuChilly and possibly to Barcelona and the Avelines, no variety is yet known in our country that will pollenize it. The bush is a strong, vigorous grower. Dorris says of it: "The Davidiana to my mind is the finest variety grown, if only a pollenizer can be found for it."

White Aveline—This variety produces a medium sized nut with very thin shell, and with kernel full and sweet and of the highest quality. It is the choicest home nut, and when the public once learns of its quality it will be in great demand in spite of its smaller size. It has a commercial disadvantage in that the husks are longer than the nuts, preventing the nuts from falling from the

shell when ripe, as do the self-husking varieties. However, greater disadvantages than this have been overcome in the fruit world and someone will undoubtedly develop a mechanical husker which will do the work. The White Aveline is a better yielder than Red Aveline and husks better. It is a very regular bearer when properly pollinized. The tree is medium to below medium in size. Dorris thinks the small size of the tree is due to the tendency towards overbearing. His trees seem to be growing more rapidly as they reach the age of 9 to 12 years. Nibler thinks that this variety does best as a bush, as it is a weak grower at best, and he thinks the training to tree form stunts it.

The Red Aveline is very similar to the White Aveline in its various characteristics. The skin around the kernel is wine colored in this variety and the nut itself is a little smaller than in the White.

Until more definite information is available on the subject, the planter had best plant a mixture of varieties. The bulk of the planting will probably be Barcelona. About 10 per cent Du-Chillys at least should be planted with the Barcelonas and about 5 per cent Davidianas. If the latter cannot be purchased, Barcelonas should be planted and later top-worked to Davidiana. These varieties are all fairly strong growers and should be planted at 20 feet apart as a minimum. The Avelines can be planted separately from the larger growing trees, as they will do well at 14 or 15 feet apart. The latter spacing will require 195 trees per acre, while the 20-foot spacing of the Barcelona will require 108 trees. Dorris found that the White and Red Avelines, when growing near Davidiana, produced well. On the strength of his observations, we would plant 195 trees per acre, about 20 per cent Red Avelines and the balance White Avelines. While the initial cost of such a planting would be more than

with the larger varieties, one would be certain of a heavy yielding grove of a variety of nuts that will, in discriminating markets, command a premium.

We know of successful plantings on river bottom soils, on the silt loam valley soils and on the red hill type of soil. Our personal opinion is that the desirability of these soil types is about in the order that they are above mentioned. Frost need cause no worry to the planter, as it does not seem to affect these early blooming nuts. While it is not desirable to plant any tree in extremely wet soils, the filbert does not seem to be as particular in this respect as are many other trees.

The filbert is with us to stay. While many phases of its culture are still in an experimental stage, the question as to whether it will make a paying investment is past that stage. Within a few years the filbert industry will be mentioned along with the apple, pear, berry and walnut industries of the Northwest.

Solving the Fruit Growers' Problems by Coöperation

From the Viewpoint of G. Harold Powell, General Manager California Fruit Growers' Exchange

WILL the coöperative organization solve the production and marketing problems of the producer without disturbing the functions of the jobber and the retailer and at the same time maintain a fair price to the consumer for fruit and other perishable products of the soil? G. Harold Powell, general manager of the California Fruit Growers' Exchange, answers this question in the affirmative and adduces incontrovertible evidence as to what the organization he represents has done to support his statements. Furthermore, Mr. Powell, who, in addition to his long experience with the California Fruit Growers' Exchange, was identified with Herbert Hoover in the Food Administration during the war, is emphatic in his statements that the producer must work out these important problems for himself. In addressing the Northwest Fruit Growers' Conference at Spokane recently on this subject he said:

"The citrus industry of California represents an investment of \$225,000,000. For a period of twenty-five years the growers have coöperated in the distribution and marketing of their crops; in the last ten years in many phases of production, in fruit handling, in the purchase of orchard and packing house supplies, in the protection of their groves against diseases, insects or frost, in the ownership of timber lands and the manufacture of boxes, and in the conversion of low grades of fruit into by-products. The growers of the California Fruit Growers' Exchange own the trade-mark under which their better fruit is sold and they have invested more than \$250,000,000 in national advertising in twelve years to increase the consumption of citrus fruits. They have coöperated with the wholesale and retail trade in the development of better methods of fruit merchandising; with the state and national governments in

the establishment of better methods of production and of fruit handling; and with the railroads in securing a better service and a better type of refrigerator car.



G. HAROLD POWELL
General Manager of the California Fruit Growers' Exchange, the largest and most successful coöperative association in the world.

The Producer and His Problems.

"The questions which affect the stability and permanently successful development of the fruit industry can only be worked out by the producers coöperatively. They will not be solved by anyone else, because no one but the producer has a primary, vital interest in production. They cannot be solved by an individual producer. The progress that has been made in every question affecting the production of citrus

fruits, such as the cheaper purchase of supplies, the community protection against insect pests or community frost protection, the economical harvesting and handling of the fruit, the establishment of a citrus fruit experiment station by the State University, has resulted exclusively from the initiation and the coöperation of producers. Those who handle the growers' product for them sometimes follow: they cannot lead in the progress of an industry. Their interest in the problems of production is secondary.

"The problem of distribution and marketing a rapidly increasing crop, such as equitable national distribution, the development of new markets, and effective national advertising, can be handled by producers coöperatively, and by them alone. Twenty years ago, when the rapidly increasing citrus fruit crop was left in the hands of individual buyers, either local or distant, to handle, the marketing collapsed because the buyers could not take a risk when the crop was large and the distribution was not coöordinated. The industry problem was met only when the producers systematized the distribution of their own fruit, eliminated speculation from its purchase and distribution, established their own agents, and sold it to the wholesale trade in the markets where the fruit was to be consumed. The delivered system of selling replaced the speculative f.o.b. method of sale, which had brought the industry to a state of bankruptcy, and with the speculative element at the point of production eliminated the growers have been able to keep the markets of the country evenly supplied, thereby making it possible for the jobber and retailer who bridge the gap between the producer and consumer to sell on an even merchandising, rather than an erratic speculative basis. The average jobber's margin on oranges, for

example, is now less than 10 per cent on the selling price, while the retailer's margin is about 25 per cent. These trade margins, which are the lowest on any of the fruit crops, have been gradually reduced because the growers have furnished an even, dependable supply of standard grades of advertised fruit to the markets where they are to be sold.

Principles of Organization.

"A coöperative organization, to be successful permanently, must be founded on economic necessity. It must be composed of growers exclusively, and it must be financed exclusively by the growers. None has succeeded in which the growers and the buyer and speculator are joined together, because the interests of the two are not the same. The grower's primary interest is in the permanent prosperity of his investment; the buyer or speculator primarily in the success of his immediate business transactions. Only the man who owns the land and whose investment runs into the future is willing or is in a financial position to make investments that safeguard the future of an industry.

"A coöperative organization is one in which the members form an agency through which they work out their common problems at cost without profit to the agency—the benefits going to the members in proportion to the business transacted by each, but the cost being the same per unit for each, irrespective of the volume contributed. To be permanently successful the organization must be formed by the growers, organized by them, and the benefits returned to them. Any other type of organization is not coöperative, and if used, the term misleads the public as to its purposes.

Capital in a Coöperative Organization.

"The California Fruit Growers' Exchange has no capital stock. It estimates the cost per box of transacting business annually, then levies an arbitrary assessment for the year. At the end of each month it renders a bill to each District Exchange for the number of boxes shipped during the month. It does not take the marketing cost out of the proceeds before returning them to the District Exchanges. At the end of the year a surplus, if one has been accumulated, is prorated to the District Exchanges on the basis of the shipments of each. The Exchange makes no profit, receives no dividends, accumulates no surplus.

"Where a producers' organization requires capital for the purchase of supplies or for other purposes, the Exchange has worked out a plan by which the capital contribution of the stockholder is kept permanently proportional to their shipments by a revolving fund into which the stockholders agree to pay a specified amount per box annually, based upon their respective shipments. With the money so contributed an equivalent amount of the oldest issued stock is purchased and is transferred to the stockholder making the last contribution. The capital stock is revolved out every five or more years,

depending on the cycle adopted. The grower contributes annually on the basis of his previous shipments, and receives a return of capital based on his shipments of five or more years previously. The capital contributed is paid 6 per cent interest, but no dividends are paid to the capital except the interest rate. The corporation is not formed for money-making purposes. The capital is necessary to provide the facilities through which the members transact their business, and both the benefits and capital contribution of the members are always kept proportional to the use which the member makes of his own facilities. American agriculture is full of the wrecks of farmers' organizations that were formed as stock corporations, with disproportional capital contributions of the members, with no way to retain the capital within the organization or to keep it always proportional to the shipments of the members. The revolving fund plan overcomes the objections to a capital stock corporation and provides a strictly democratic form of organization.

The Open Door to Square Deal.

"A coöperative organization should have an open-door policy, i.e., one by which every grower who will conform to the policies of the organization, who will abide by its rules and regulations, and who will assume his share of its responsibilities may be admitted to membership. It is equally important that a member be permitted to withdraw from the organization should he become dissatisfied, provided his withdrawal is in accordance with the by-laws or contract provisions governing withdrawals. No grower should be held permanently in a coöperative organization against his judgment. A contract or membership agreement between the association and the grower is fundamental for purposes of business stability. The association must know definitely what it is expected to do, the volume of business to be transacted, the approximate overhead cost and the preparation necessary to transact the business in an orderly, economical manner. But in the long run the benefits of a coöperative organization are the only things which hold the members together.

Coöperation and Standard Grades.

"No community can become known in the markets of the country, and especially to the consumers, unless the fruit is handled, graded and packed under standard rules and regulations and sold under an association trademark brand, each local unit retaining its own local brand in addition to the trademark to identify the quality of the fruit of the community. The wholesale and retail dealer buys on the quality of the local brand to supply the quality required by their customers. The consumer buys on the advertised trademark of the general association. The trademark is the guarantee of the association to the consumer and the public. It represents a minimum standard grade, with various grades above the minimum representing the quality of fruit of each community.

An unadvertised local or buyer's brand may have been sold for twenty years in a community and not be known to 2 per cent of the consumers who have actually used the fruit, while a nationally advertised brand will be known to more than half the consumers in the same community. Such has been the actual experience of the association of citrus fruit growers selling under local brands alone as compared with the growers selling under the Sunkist brand with the local brand added.

The Need of National Advertising.

"Advertising to the consumer is fundamental in increasing the consumption of a rapidly increasing production of fruit. It increases the per capita consumption and develops new consumers. It widens the growers' markets and produces a consumers' demand which helps the jobber and the retailer, who are primarily order takers, sell the fruit. It strengthens the relations between the grower, the trade and the consumer. It makes it possible for the jobber and retailer to sell quicker at lower margins per turn over, and to give the consumer a product uniformly distributed at a lower cost of distribution.

Coöperation Between the Producer and the Trade.

"There should be the closest coöperation between a producers' organization and the wholesale and retail trade. The latter are the distributing agents which bring the producer and consumer together, and the span can be efficiently and economically bridged only when there is a mutual understanding of each others' problems. The producer cannot deliver his fruit to the retailer without the jobber, nor to the consumer without the retailer. There are 3,500 fruit jobbers in America, with 10,000 or more traveling salesmen to develop a country business, and 350,000 retail merchants who sell the fruit to the consumer. The producer cannot take the place of either. The risk and the cost are both prohibitive.

The Future of Coöperation.

"The future of coöperation will depend not alone on how well the growers handle the business in hand, whether it be in production, in distribution and marketing, or in development of a larger consumer demand, but largely on how well they meet the vital questions of the day which are leading to world-wide social and economic unrest. A coöperative organization has a public interest relationship which it must scrupulously fulfill, as well as the relationship to its members. It cannot live for itself alone.

"A coöperative organization of fruit growers by illustration should be an important factor in reducing the cost of living as well as insuring the grower a fair price for his fruit if it is to play a vital part in future social and economic life. The producer is entitled to a fair return on the cost of production, if the law of supply and demand warrants it. The coöperative organization, however, should make a larger production possible by reducing the cost of production

Continued on page 35.

Practical Pruning as Applied to Apple and Pear Trees

By O. M. Morris, Horticulturist, Washington State College of Agriculture

(PART TWO)

THE general practice in pruning is to do the larger part of the work during the winter. This has two things to justify it. The workman can get a better view of what he is accomplishing and there is then more time for the work. As a rule, trees pruned in winter have a stronger tendency to respond to producing new growth in the form of water sprouts or new twig growth at the points where the cuts were made. Summer pruning, as usually practiced by careful growers, is as much training as pruning, and is practiced as much for the purpose of modifying the form rather than the growth or fruit production of the tree. Heavy summer pruning may accomplish the same results that heavy winter pruning ordinarily accomplishes. It may increase or decrease wood production or fruit production. Summer pruning can be practiced for the purpose of modifying the shape of the tree top without altering its habit of growth or fruiting. The exact dates at which summer pruning may be done for the purpose of increasing fruit production cannot be indicated by the calendar with any degree of exactness. Results depend upon the growth conditions following the pruning and the kind of pruning done, more than upon the date of pruning.

Late winter and early spring pruning is less liable to be followed by the ill results of the killing back of tissue around the edge of large wounds than the pruning done in late fall and early winter. The wood should not be frozen when the pruning is done, but in many of the irrigated sections pruning while the wood is frozen frequently results in no harm to the tree.

The young, rapidly growing tree constantly tempts the pruner to head back severely each year. Heading back causes the development of lateral buds and branches in the immediate vicinity. It does not greatly modify growth nor strengthen the main branches or limbs of the tree. Shortening of the longest branches is often necessary. This can be done with a minimum loss of time and energy to the tree by frequent tipping back in summer. Persistent annual heading back delays as often as it hastens fruit production. It commonly results in the formation of a tree with an excess of large branches and an undersupply of fruiting wood in the center of the tree top. The thinning out of the top should consist of the removal of crossing and interfering twigs and small branches and of such larger branches as will prevent the best development of the remaining limbs. A great deal of small side wood should be left. It increases the diameter of the main limbs and causes the tree to come into fruit production at an earlier age. Thinning out by the removal of large branches is not so frequently overdone as is heading back.

Varieties.

The commercial varieties grown in Washington differ greatly in their general shape and characters of growth, and each requires more or less different lines of treatment to prune them best.

Jonathan—This tree is typical of those that are inclined to start with a strong central leader and very quickly develop strong lateral branches. The central leader usually subdivides by developing in lateral directions and the strong side

knowledge that heavy fruit production will cause the top to spread, and as the trees grow older more severe training and more thorough fertilizing of the soil is necessary to maintain vigor in this variety. This variety has a good habit of bearing fruit on small side branches and with proper training the fruit will be well distributed from center to circumference of the top.

Rome Beauty—Rome Beauty produces a tree that, until fruit production begins, has a strong tendency to grow upward and the branches assume a lateral direction only when trained by the grower or held in that position by a load of fruit. This variety has a strong tendency to produce its fruit on long fruit spurs which are often more like terminal branches than fruit spurs of other varieties. A rather thick, bushy top is required by this variety for the production of a crop of fruit distributed throughout its top. The most common experience of the unskillful grower is to have the Rome Beauty produce a large amount of fruit in the outer part of its top. This causes a drooping of the branches and often a canopy form of top in late summer and early fall, with the result that a very large proportion of the crop is not well exposed to the

sun and colors poorly. A rather severe thinning out of the large branches and careful tipping back of the young shoots is necessary to secure an even distribution of fruiting wood throughout the top of this variety. It does not develop its fruit well on short side spurs, as does the Jonathan; and growers expect it normally to produce a larger proportion of its fruit in the outer part of the top.

Ben Davis—The Ben Davis, Gano, Black Ben Davis, Arkansas, Winesap, Stayman Winesap, and Delicious, as young trees have a strong tendency to grow in height, with a development of well distributed lateral branches capable of making a good well-balanced top. All of these varieties can be well developed by starting the young trees with a central leader and maintaining it for three or four years. The maintenance, however, of the central leader with these varieties is not as important as with the Jonathan and, as with that variety, it will usually cease to be noticeable in trees seven or eight years of age. All these varieties are vigorous growers as young trees and can be easily trained to open tops with well-balanced heads. The Ben Davis, Gano, Black Ben Davis, Arkansas, Stayman Winesap, and Delicious are vigorous trees even while in heavy fruit production. These varieties are moderately heavy, annual fruiters. The Arkansas Black is often a light producer and should be pruned so as to open the top as much as possible with the removal of a minimum amount of wood. This process will usually bring the trees

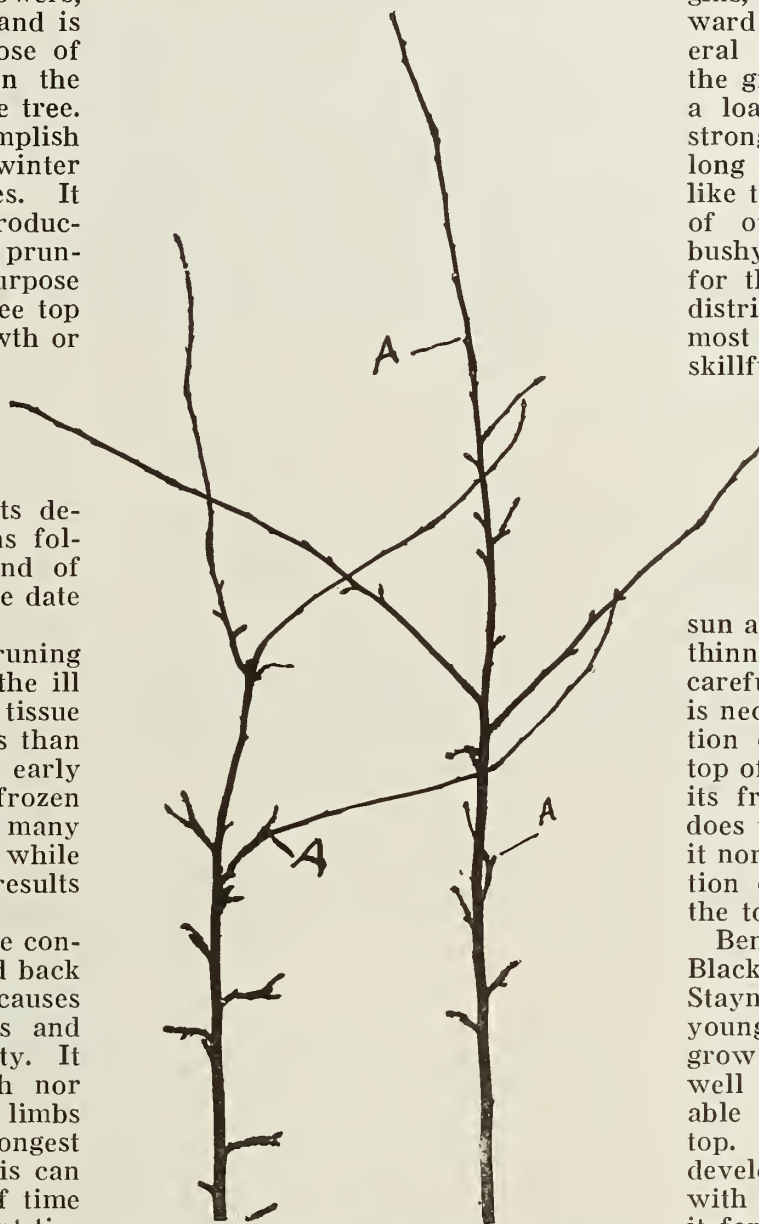


FIGURE 7. The fruiting branches of a Jonathan tree. Note that all of the larger terminal buds both on the twigs and the spurs are blossom buds for next year's crop. At the point A the fruit spur has developed into a twig. Such forms are common in this variety.

branches have a tendency to assume a horizontal position and, with a heavy crop of fruit, to become pendant and drooping. The extremely short trunked trees of this type are disappointing because the fruit is produced so low that it hinders the ordinary cultural processes and the fruit produced on such branches is of poor color and quality. A constant effort is necessary to keep the tree growing in an upward direction sufficiently vigorous to develop and color its fruit well. Young trees should be trained to grow upward with the



FIGURE 8. A common type of trunk and lower framework of a Rome Beauty tree.

into their heaviest fruit production. The Winesap is a vigorous growing tree while young; but, when heavy fruit production begins, the tendency of the tree is to over-bear and lose vigor. This must be corrected by sufficient pruning to prevent an excessive development of fruit wood and the maintenance of a good supply of young growing shoots. Pruning alone can not secure the best results with this variety; but thinning of the fruit and improvement of soil fertility and tillage must be depended upon to secure the annual production of extra fancy fruit. The Stayman Winesap is less inclined to over-bear, but in other respects is very much like the Winesap tree.

Esopus—The Esopus (Spitzenburg) is difficult to prune to the best form. The tendency of the tree is to produce long branches and to produce the fruit on short spurs distributed along these larger branches. Young, vigorous growing shoots that are headed back frequently fail to produce three or four side branches as desired, but produce one and sometimes two branches which assume the direction of the original branch. Every effort possible is usually necessary to cause this variety to produce sufficient side branches to carry a good crop of fruit. The variety also has a strong tendency to biennial crop production. Thinning the fruit and careful, regular annual pruning with good cultural care will do the most possible to overcome this unsatisfactory tendency.

Wagener—The Wagener tree must be treated very much the same as the Spitzenburg in as much as it fundamentally develops in the same way. Careful thinning of the fruit of this variety is necessary to avoid biennial

fruiting. Another peculiar characteristic often manifest is the tendency of the tree to produce a heavy crop of fruit on two or three large branches while the remaining part of the tree will have very little, if any fruit. Careful thinning and regular annual pruning will do the most possible to correct this habit.

Yellow Newtown—This variety often puzzles the grower with its tendency to produce many long slender branches with a strong upward tendency of

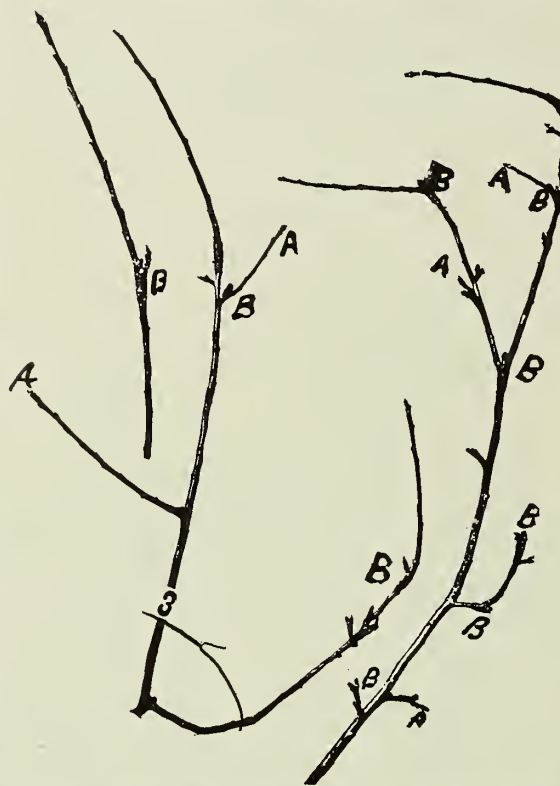


FIGURE 9. The fruiting branches of a Rome Beauty tree. The enlargements of the branches marked by B are the points at which the fruit was produced last summer. The buds marked A are blossom buds for the next spring's crop. Note the long twig growth beneath each of last season's fruit spurs.

growth. Careful thinning of the largest branches with light heading back and encouragement of small side branches will produce the best results.

Wounds.

Wounds heal by the growth of the adjacent cambium layer and bark, which gradually spreads over the exposed area. The more rapid the growth of the plant in that area, the more rapid the healing. Stubs of branches left by pruning heal slowly because they are usually removed from the line of travel of the sap which feeds the new developing tissue. Not only the fresh cut wound that is exposed must be healed, but the entire stub should usually be considered as the area to be healed in the growing process. This makes it doubly important to prune carefully in removing large branches and to make the cut as close as possible and almost parallel to the main branch or trunk.

Wounds made in the process of cutting away diseased parts of trees should always be disinfected, and for this purpose there is nothing

better than a 1 to 1000 solution of corrosive sublimate (mercuric chloride). It is now prepared in tablets, one of which dissolved in a pint of warm water, gives the desired solution. Grafting wax and similar preparations are often used on stubs left by removing branches but this material is of doubtful value. The use of common white lead paint is growing more in favor and seems under the greatest range of conditions to produce most uniformly satisfactory results. The practical value of any dressing for wounds lies in the extent to which it disinfects the wound without injury to the tissue, and prevents excessive drying.

Broken Trees.

Branches broken by an overload of fruit or by a storm can seldom be repaired with good results. Small branches that do not leave large enough open spaces in the trees to be a serious loss should be cut back to side branches or to a parent branch. The neighboring branches will, if permitted, soon fill such spaces. Large branches, when broken should be cut off smooth with a saw and the following winter top grafted. If the work is well done the open space left will be filled in two or three years by the new wood. This form of renewal can very often be quite satisfactorily used and reduces the loss from such breakage to the minimum.

Large branches that are split from the trunk of mature trees can often be lifted back to their original position and fastened there with a bolt through the base. Guy wires should then be attached to the branches higher up to help hold the load. The bolt used should have no larger head than is positively necessary to hold the weight and should be sunk into the wood. This will enable the wood to heal over

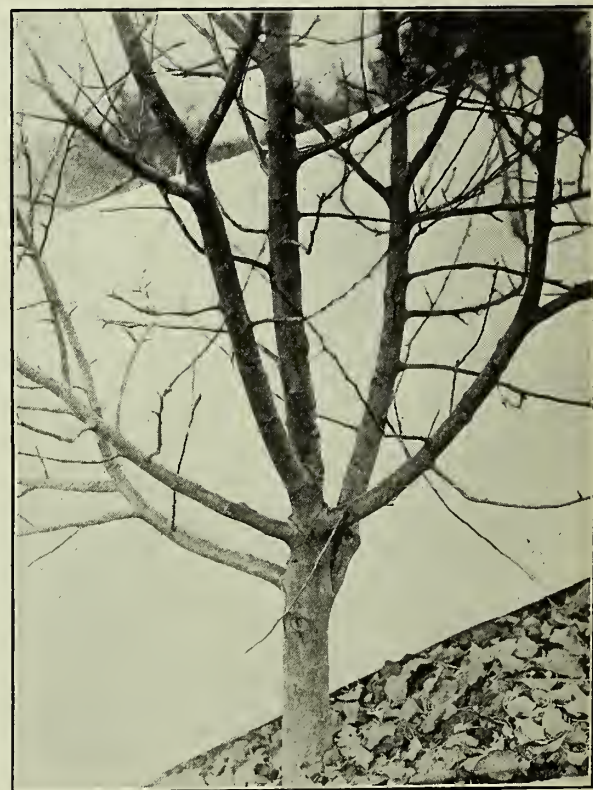


FIGURE 10. Base and framework of a Gano tree. This shows a type of framework that is common, but the individual tree has too short a trunk to be satisfactory.

quickly. Large wood screws that will not reach quite through the base of the tree can often be used with better results than bolts. This work must be done very soon after the damage has occurred. If a top is permitted to retain this broken position long the wound will dry badly and worse breakage will occur when the repair is attempted. If this repair work cannot be done very soon, it is usually better to remove entirely the broken parts. Young trees badly split or broken can best be renewed by trimming away the broken parts and permitting the trunk to develop a new top. In extreme cases it is best to remove the tree entirely and replant with a young tree.

There are many forms of supports used in trees to prevent breakage. The best system is to prune and train the tree so that the large limbs will be evenly distributed and sufficiently strong to support a large crop when the fruit is properly thinned. The special propping of individual limbs will be required occasionally in heavily bearing orchards that have received the best pruning and training possible to give, but proper thinning of the



FIGURE 12. A Wagener tree that has been in fruit production three or more years. Note the distribution of the fruit spurs alongside of the pole-like large limbs.

the limbs is sometimes used to good advantage. Usually, however, such ties are too rigid and do not completely avoid breakage.

The center prop system with guy wires running from the top of a pole standing in the center of the tree to each individual branch is used by many with very satisfactory results. The

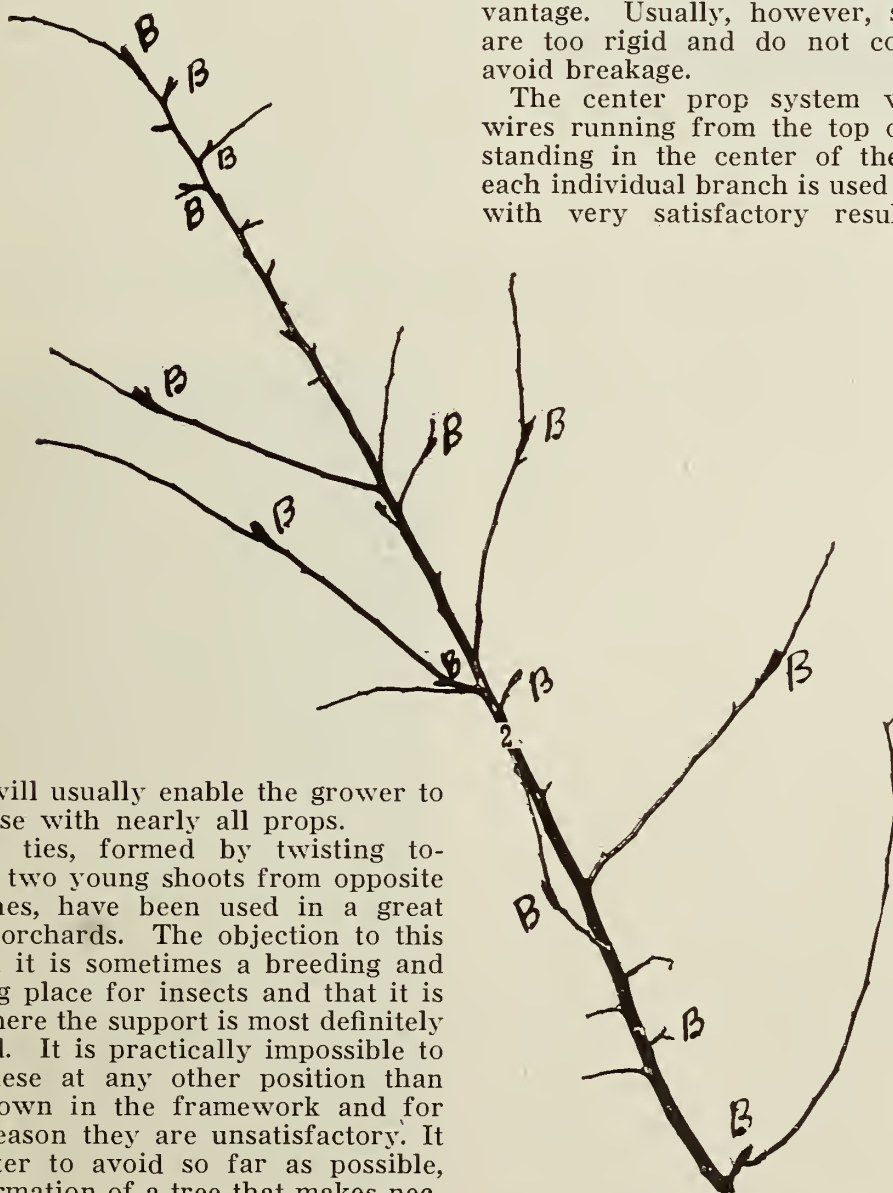


FIGURE 11. The fruiting branch of a Gano tree. Note the distribution both on long and short spurs or twigs of last year's fruit crop produced at points B.

fruit will usually enable the grower to dispense with nearly all props.

Live ties, formed by twisting together two young shoots from opposite branches, have been used in a great many orchards. The objection to this is that it is sometimes a breeding and lodging place for insects and that it is not where the support is most definitely needed. It is practically impossible to use these at any other position than low down in the framework and for that reason they are unsatisfactory. It is better to avoid so far as possible, the formation of a tree that makes necessary the use of such ties.

Cross tying opposite limbs with wire that is fastened to screw eyes placed in

damage that is liable to occur with this form of prop is that the point of support is placed under the limb too near the trunk, with the result that the limb breaks near the point of support. In order that this system may be used to its best advantage, it is necessary that the pole should extend well above the highest branches of the tree.

The individual pole prop has the advantage of being susceptible of adjustment in any way that the situation may demand, and can be removed easily as soon as its need has ceased to exist. All forms of props should be considered as a temporary relief from the unsatisfactory situation that has developed and no form can be devised that will be of any more than temporary value. The growth of the tree and its development from year to year will change the position and amount of assistance needed to carry the load of fruit.

Pears.

Young pear trees are pruned very much the same as young apple trees. A greater effort is usually made to cause the young trees to assume a spreading form. A little summer pruning may be of much help in accomplishing this. The top branches, if cut back to an inside bud, will throw out several branches and the following year the two-year-old branch can be cut back to the one-year-old outside branch. This process will usually secure a greater spread of framework than cutting to an outside bud. Heavy cutting back is often carried to excess in an endeavor to cause the young tree to develop more side branches and to cease its strong upward tendency. Better results will often be attained if the trees are brought to bearing age with no more pruning than is necessary to secure a good, well balanced framework. After the habit of fruit bearing is well established heavy pruning is most successful. The trees, while bearing heavy crops of fruit, develop more lateral wood and assume a more spreading form.

The fruit may be thinned by pruning, but hand work in removing the fruits is much more successful. The most important work in pruning is to head back the few longest and strongest growing branches



FIGURE 13. The fruiting branch of a Wagener tree, showing the short fruit spurs and the tendency of the variety to produce extensional branches when headed back.



FIGURE 14. An ideal form of Bartlett pear tree in full fruit production. Of special interest is the upright form of the main branches or framework of the tree and the crooked stub form of the smaller wood.

and remove enough wood to maintain the vigor of the tree. Mature trees in heavy bearing require heavy annual pruning. The top should be kept sufficiently open to let some of the direct rays of the sun reach well into the center.

The pear bears its fruit from blossoms borne in winter terminal buds on spurs, and the heavy fruiting tree tends to fill the top with short crooked spur wood. This must be greatly thinned each year at the same time the strong terminal branches are cut back. By carefully maintaining a balance, these spurs will continue a vigorous growth at the same time the outer branches are making strong wood growth.

The varieties of pears differ greatly in their habits of growth and the system of pruning followed must be especially adapted to each variety. The Bartlett and the Kieffer are very vigorous growers as young trees and all the branches grow nearly straight up. Heavy winter pruning seems to accentuate this characteristic. The older trees develop a more rounded top. The Winter Nelis produces such crooked branches that all that can be done for it is to thin out the top to admit light and cut back some of the longest and strongest growing shoots. In pears, as in apples, heavy pruning of young trees tends to delay fruit production and if not well done will do more harm than if pruning had been neglected.

The presence of diseases sometimes makes it necessary to cut away most of the fruiting spurs developing on the large branches. This, however, should be practiced only as an expedient under abnormal conditions.

Northwest Fruitmen Discuss Production Problems

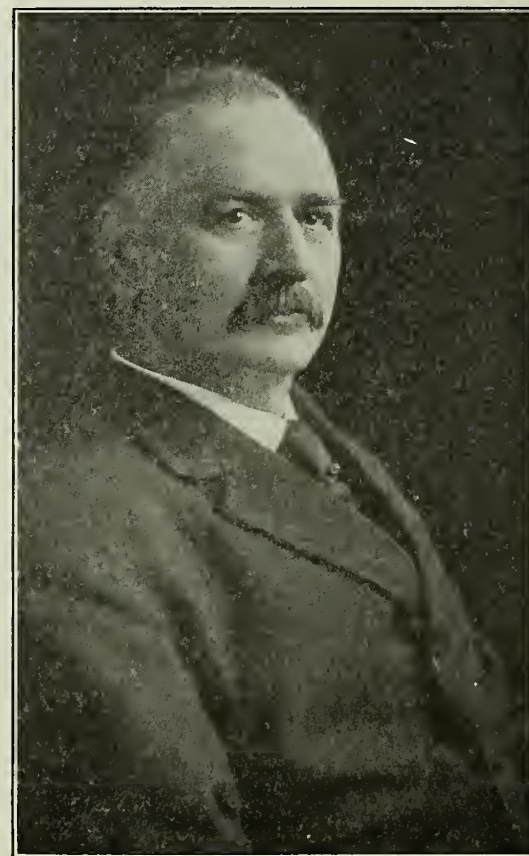
By W. H. Walton

THE joint meeting of the Washington State Horticultural Association and the Northwest Fruit Growers' Conference held in Spokane in the early part of December resulted in assembling one of the most notable gatherings of fruitmen and others interested in horticulture that has taken place in recent years. All of the Northwest states were represented and keen and intelligent interest was taken in all of the subjects discussed—the kind of interest that forced the conclusion that the 200 or more representative Northwest fruitmen who were in attendance were in the fruit business as an industry and not from the speculative point of view. In fact the "boom" element was noticeably absent. It was evident also, that the fruit growers from the regions represented are not being led astray by the high prices that have obtained for the past two years and that although they look forward to the future with confidence that they are taking the necessary steps, through lower costs of production, more practical and scientific cultural methods, better packing and grading and improved marketing facilities, to meet contingencies that may arise under normal conditions.

Sectional Rivalries Dropped.

The dropping of sectional rivalries was also another feature that was obvious. This was particularly shown in the desire of the representatives from the various states to establish a standard Northwest grade and pack, although this was not accomplished owing to the fact that Oregon and Montana have no state grading laws. The three-grade pack was retained and it is hoped at some future time it may be possible to establish uniform grades and pack for the entire Pacific Northwest. If the two-grade pack had been adopted by Washington, which was proposed, it would have undoubtedly delayed united action on this much desired result for a long time and might have killed it. The spirit of coöperation was also manifested along other lines. In fact it was referred to by almost every speaker who addressed the meetings and was the common theme in nearly every conversation of growers. The revelations of G. Harold Powell, General Manager of the California Fruit Growers' Exchange as to the success of that organization in handling the marketing and other problems of the citrus fruit producers were undoubtedly an eye-

Continued on page 36.



E. F. BENSON

Washington State Commissioner of Agriculture who urges the abolishment of sectional lines in handling the problems of Northwest fruit growers.

Some Observations on Financing Horticulture

By W. S. Peachy, Vice President of the Seattle National Bank

THE caption assigned to me indicates an unlimited field in which to roam. A pardon must be granted me if I go too far afield or cover any part of my subject too thinly.

I have been becoming acquainted with the subject of financing fruit to market for three or four years, but will not attempt to present the last word in fruit financing. I want to be as definite however, as I can, and I shall commence with the one definite statement that financing the fruit crop of the Pacific Northwest is now one of the clearly recognized functions of the banks in this field. In fact, I have seen evidence of competition for the preferred class of this business, where previously there had been reluctance. The bankers have changed their attitude only because the fruit growers have done so; because organization and science have in many instances succeeded haphazard operation and speculation.

Financing horticulture, like financing any other crop, goes from the ground up. Undoubtedly the banking fraternity got some of its worst experiences on the ground floor when it was assisting in speculation in orchard lands. Sad though it may be, it seems to have been a necessary experience—only on the theory, however, that all things are for the best. Presumably, the lesson had to be learned and let us profoundly hope that the losses of that unhappy time have in many cases at least been offset by those who turned their speculative swords into ploughshares and by untiring and continuous industry have brought conditions up to the solid state they are in today when the fondest dreams of horticulturists are being realized so far as price is concerned.

When I was asked to cover this subject my first impulse was to get among other things—statistical facts and figures that would show clearly the results to banks of financing horticulture, but I abandoned this idea because of insufficient time, and for the further reason that I was disinclined to open old sores, as I undoubtedly would have done by a state-wide search for financial results to banks; and also because on disagreeable subjects like this one does not always bring forth true revelations. The next best way in which I can do justice to the subject is to tell in detail why the bankers are now warming up to the financing of horticulture and how they will be glad to go further under certain conditions.

In the first place, the banks are pretty well satisfied that the speculative era has departed, so far as land is concerned, and that so far as the products are concerned, the tendency to speculate at present is waning. This is a good place to warn against a revival of land speculation and against any tendency toward fruit speculation. Perhaps the prime basis of this disinclination of bankers in this respect, is the perishable nature of fruit. To add speculation to this objectionable feature

would and should prove fatal to those desiring banking coöperation in the industry.

The technicalities of handling financial transactions to facilitate the fruit growing movement are many and varied, each with its weakness and merits. I shall attempt to discuss a few of the most familiar types. Possibly the oldest and the best known is the ordinary rancher crop moving loan, which comes to the bank like any other crop loan and is liquidated as the crop is liquidated. If the borrower is good in the usual respects and a good fruit man besides, with proper equipment for packing and storage this type of loan may well be acceptable to the banker. If the statement of the maker is satisfactory his notes can be rediscounted at the Federal Reserve Bank. Next comes the unit, the strength of which makes all the difference to the banker and his judgment of the paper and also to the Federal Reserve Bank. It means everything to the banks to know that the unit is strong, well organized and equipped.

The unit must be well organized from every angle. Generous allowances should be made for unit purposes, warehouses, machinery, advertising and lean years. Of these perhaps the most pressing requirement is warehousing, for stabilizing the market and to provide against car shortage. This unit paper is likewise acceptable at the Federal Reserve Bank, if the unit statement is satisfactory. Next comes the central selling organization, really a collection of units and on the strength of that organization depends more completely its credit standing with the bank than in the first two named cases. The Federal Reserve Bank of this district has adopted a liberal policy toward fruit crop movement paper, no matter how it originates, and provided it is received from strong initial sources through member banks.

The paper most desired by the bank is the draft payable at thirty days or so, after date, with documents attached covering the fruit in transit. These drafts can be handled on an interest basis for outstanding time. Some local bankers, depending on the standing of the drawer make advances on these drafts as high as face value, with interest adjustment as mentioned above. It is quite essential in some cases to require a margin of the value of the draft to protect against fatalities, which the banker may consider not properly protected by the general credit of the drawer. This practice is particularly in vogue between dealers or factors and the banks. Many of these dealers are highly responsible firms whose ratings are such as to require but ordinary banking precautions. Others are able to do business only under a guarantee or letter of credit from buying sources. Others handle on consignment, a practice mostly in lean years. I am re-

liably informed that there are firms, often with high sounding names, who establish themselves with an office, make arrangements for space in a warehouse, then attempt to do business without any capital to speak of, trusting entirely to their resourcefulness in establishing credit and in holding off settlement until they get returns. The career of this type of dealer or agent is usually short with the bank.

I mention these numerous means of financing for the stress I wish to put upon the preferred type of customer the bank likes to coöperate with, and that is the organized unit. The organized unit is the thing, in my opinion, and organization should be the main cry of the fruitgrowers of the Pacific Northwest.

Too little emphasis is placed upon this vitally important subject by a majority of the growers. There is a far too large proportion of the growers totally unorganized; too much of a tendency to play a lone hand—to “go it alone.” There is a true saying that “Coöperation is born of adversity and dies of prosperity.” Since 1915 prosperity has come to the fruit growers of the Northwest in steady increasing measure and many of them have forgotten the lessons of 1912 and 1914, becoming blinded to the inexorable laws of cause and effect—of action and reaction.

Yet many of these so-called independents will concede, under pressure, that a large share of their success is due to the unremitting toil, sustained through the years gone by, of a faithful minority of earnest growers who have steadfastly supported local and general associations. These organizations have borne practically the entire burden of the constructive development of the industry. They have supported their vision with their credit and used this credit to finance the construction of a majority of the best buildings now serving the industry, lacking which, this very season appalling losses would have been sustained. They, and they alone, are responsible for the amazing growth of market development and distribution, which is the most important single economic factor in the entire industrial equation.

Consider the figures descriptive of this accomplishment. Prior to 1910, it is estimated that boxed apples were distributed direct from the Northwest in carload lots to less than twenty-five cities in the entire United States and Canada. The great majority were bought up by a few large speculators and shipped to Chicago, New York, Philadelphia, Pittsburg, and Boston, and from these centers the surplus reshipped in small lots to other markets. This indirect method of distribution was not conducive to free consumption because the expense of so many handlings and combinations of freight charges made the fruit a luxury unavailable to the man in the street.

Now note what has been accomplished in the intervening years: The United States Bureau of Markets in a circular issued on May 1st, 1919, reports that there were shipped out of the states of Washington, Oregon, Idaho and Montana, of the 1918 crop, 18,849 carloads of apples, and that these 18,849 carloads were directly distributed to 743 different primary destinations scattered over every state of the Union and every province of Canada.

Now this impressive distribution has not, like Topsy, "just grew"—it is the clearly demonstratable result of intelligent, sustained, constructive salesmanship and advertising conducted and financed by the organized minority. But for this tremendous expansion of the market for boxed apples, nothing could have prevented a series of market disasters ending in the bankruptcy of the industry. Non-organization growers are too prone to attribute their period of prosperity to superficial causes, or to give undue weight to certain contributing causes, such as shortage of competitive crops, superiority of their product, etc. These factors are all important, but fundamental to the whole problem—the one indispensable controlling factor—is distribution and it cannot be too strongly reiterated that distribution is not a spontaneous growth, but a definite result, flowing from intelligently directed effort.

I think this is especially interesting as I hear so much talk of "cash buyers" which are well enough I think when recognized in their true proportion as a fractional part of the whole market, but a very dangerous factor when, as too often happens, the grower puts his whole dependence on the "cash buyer" and neglects to provide selling machinery which is reliable in years of market adversity when sales are difficult and require genuine salesmanship to effect, as well as in years like the past four or five in which a sales organization has, to the shortsighted ones among the growers, seemed only a burden.

Now I am not forgetting that my subject is a financial one, but these questions of organization, distribution, and marketing are fundamental to practical financing. The banker wants to know that the security behind his loan is ample and this assurance is strengthened when numbers of growers are joined together in guaranteeing an undertaking. But, the independent says: "The fruit is good security of itself." The banker answers: "Perhaps. It is good security if in strong, competent hands, but very doubtful security in weak hands." The banker wants to know that the industry he is financing has a sales policy and commands a dependable year-in-and-year-out, rain-or-shine marketing machinery that is able to cope with an adverse market situation as well as merely to ride the tide of prosperity. And it must never be forgotten that the law of equal and opposite reaction has never yet failed to operate—that the pendulum has never failed to swing backward as far as it swung forward. There are signs that commodity prices have reached if not passed their crest. A reaction is

coming sooner or later and while this need not spell disaster or even loss it does mean a declining market, when the real test of the strength or weakness, the soundness or rottenness of industrial organization will come.

"In time of peace prepare for war" was the immortal advice of the illustrious patriot for whom our great state was named, and the banker's paraphrase of this is "In time of prosperity prepare for adversity."

The question of by-products and the many important interests tied in with the general fruit business belongs importantly to the general subject I am endeavoring to treat. For lack of time, however, I would briefly state that the question of financial strength of the borrower is the all important one, be the industry a cannery, a dehydrating plant, or any other. Any of these enterprises desiring bank help must observe great care to satisfy the banker that the organization is a well-rounded one, that it knows its business, that it has good marketing connections, and that its brands are backed up with every showing of intelligence and sincerity.

Northwest Apple Grade Schedule Submitted

AT the recent conference of the Northwest fruitgrowers held in Spokane a tentative apple grading schedule was submitted for Washington, Oregon, Idaho and Montana. This plan has been in prospect for several years and it is hoped that it will now be realized. The advantages claimed for the new schedule are that it is more simple than the ones now in use in the various states and that a uniform grading for boxed apples is very much needed. In making out the new schedule it was necessary for Washington to raise the color requirements on the fancy grade and for Idaho to lower them. Some of the size requirements were dropped and other changes made. The new schedule which has the en-

dorsement of the conference is as follows:

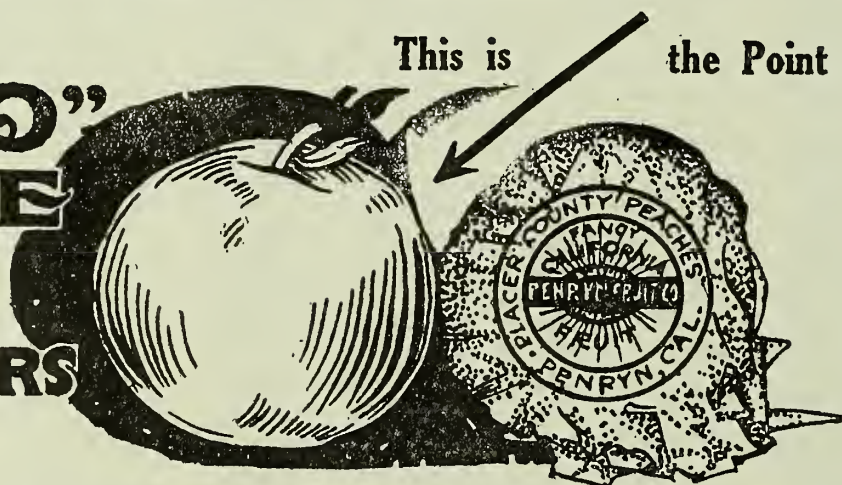
Extra Fancy.

Extra fancy apples are defined as sound, mature, clean hand picked, well formed apples only, free from all insect pests, diseases, blemishes, bruises and other physical injuries, scald, scab, scale, dry or bitter rot, worm stings, worm holes, spray burns, limb rub, visible water core, skin punctures or skin broken at stem, but slight russetting within the basin of the stem shall be permitted.

Fancy Grade.

Fancy apples are defined as apples complying with the standard of Extra Fancy grade, except that slight leaf

"CARO"
FIBRE
FRUIT
WRAPPERS



Chemically Treated
"Caro" Protects

"Caro" from DessiCARE (to dry up)

"Caro"
Prolongs the
Life of Fruit
Why?

Fruit decomposition starts from a bruise which opens tiny holes and permits the juice to escape and BACTERIA to enter.

"Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrests the decomposition—and thus **PROLONGS THE LIFE OF FRUIT**. If your fruit is worth shipping it is worth keeping in best condition.

Demand "CARO"—Wrap Your Fruit in "CARO"—The Fruit Buyer Knows "CARO"

Order from Any Fruit Company or American Sales Agencies Co., 112 Market St., San Francisco

rub, scratches, or russetting shall be permitted up to a total of ten per cent of the surface, and provided that scab spots not larger than one-quarter inch in diameter in the aggregate shall be permitted in this grade.

"C" Grade.

"C" grade apples shall consist of sound mature apples which are free from infection, bruising or broken skin and which are not badly mis-shapen, provided that two healed worm stings, slight sun scald, and scab up to a total of one-half inch in diameter shall be permitted in this grade.

Combination Grade.

When Extra Fancy and Fancy apples are packed together the boxes must be marked "Combination Extra Fancy and Fancy." When Fancy and "C" grade apples are packed together the box must be marked "Combination Fancy and 'C' grades."

Orchard Run.

When Extra Fancy, Fancy and "C" grade apples are packed together the boxes must be marked "Orchard Run," but Orchard Run apples must not contain any fruit that will not meet the requirements of "C" grade. Note: It is unlawful to remove any apples from Orchard Run grade and thereafter mark grade Orchard Run.

Tolerance.

In order to provide for the variations incident to commercial grading and handling a tolerance of 5% from standard will be permitted in all grades.

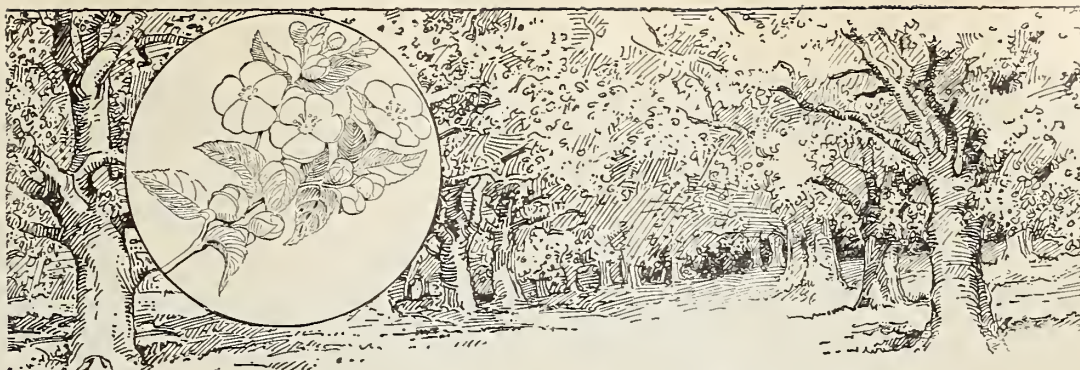
Change in Color Requirements.

	Color Per Cent
McIntosh Red, Extra Fancy.....	66%
Aiken Red, Fancy.....	25
Arkansas Black.....	25
Baldwin	25
Black Ben Davis.....	25
Gano	25
King David	25
McIntosh Red	25
Spitzenberg (Esopus)	25
Vanderpool	25
Winesap	25
Jonathan	25
Black Twig	25
Missouri Pippin	15
Delicious	25
Staymen	25
Ben Davis	15
Hubbardston Nonesuch	15
Jeniton	15
Kaighn Spitzenberg	15
Northern Spy	15
Rainier	15
Snow	15
Wagener	15
Wealthy	15
York Imperial	10
Gravenstein	10
Jeffrey	10
King of Tompkins County.....	10
Rome Beauty	15

*No color requirement on Fancy Rome Beauty 96 and larger.

Propagating the Apricot

In propagating the apricot it will succeed on the apricot root only where the soil is deep and with no indications of a clay subsoil or hardpan. The apricot may be planted on the peach root in a shallow soil or in a soil moderately heavy and retentive of moisture. The Myroblan root is the only stock to use if the soil is wet or subject to seepage in the spring.



TOP DRESSING TALKS, No. 3

Does Nitrogen make Fruit Buds?

" It is very evident that the application of nitrogen has been a very decisive factor in both the formation of the fruiting parts and the development of bloom buds. It is only where the nitrogen is added that any effect is noted."

The above are the conclusions of Prof. C. C. Wiggans, (Research Horticulturist, Delaware Agr. Experiment Station) as a result of experimental work done at Missouri Agricultural Experiment Station.

The following results were obtained by Prof. Wiggans. Trees were Rome Beauty budded on Paradise Stock.

FERTILIZER	No. of Trees	BLOSSOM BUDS IN		
		1916	1917	1918
Check, No Fertilizer	8	0	0	8
P & K, No Nitrogen	6	0	0	0
P & K, with Nitrogen	8	39	125	413

If you want fruit every year you must develop fruit buds by supplying an abundance of nitrogen.

ARCADIAN *Sulphate of Ammonia*

Regardless of the kind of fruit you grow, *Arcadian* will develop the fruit buds and will feed a big crop to maturity.

Top dress with from 100 to 200 pounds *Arcadian* per acre in the zone of the feeding roots just before blossoming and increase your profits.

Write for free bulletin "Fertilizing the Apple Orchard."

Sulphate of Ammonia is the well-known standard article that has done you good service in your mixed fertilizers for years past.

Arcadian is the kiln-dried and screened grade, made fine and dry for top dressing purposes. Ammonia 25¼% guaranteed. Made in U. S. A.

FOR SALE BY

CALIFORNIA: San Francisco, Hawaiian Fertilizer Co., Pacific Bone Coal & Fertilizing Co., Pacific Guano & Fertilizer Co., Western Meat Co., California Fertilizer Works; Los Angeles, Pacific Guano & Fertilizer Co., Pacific Bone Coal & Fertilizer Co., Agricultural Chemical Works, Hauser Packing Co., Hawaiian Fertilizer Co., Ltd., Southern California Fertilizer Co. OREGON: Portland, Swift and Co.

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as to application,
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Agricultural
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WILL EMBRACE
THE MOST MODERN IDEAS
OF EFFICIENCY
AND THE INSTALLATION
OF NEW MACHINERY
IS AN
ASSURANCE TO OUR CUSTOMERS
AND
PROSPECTIVE CUSTOMERS
THAT EVERY EFFORT
WILL BE MADE
TO RENDER
SERVICE and QUALITY
EVEN SUPERIOR
TO THAT GIVEN IN THE PAST

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YEAR

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Apple Industry, Theme of Transportation Men

INFLUENCE in promotion of Northwest industry by the transportation interests was manifested in Seattle Dec. 15 in the inauguration of a Transportation Apple Day, the Transportation Club of Seattle formally celebrating the first of what promises to be an annual apple event. The affair was held at the headquarters of the Transportation Club and was presided over by J. Curtis Robinson, traffic manager of the Northwestern Fruit Exchange. Mr. Robinson explained that Transportation Apple Day was the creation of Fred W. Graham, president of the Transportation Club, and he reminded the audience that a few years ago this same body had with great success inaugurated an annual Salmon Day. He pointed out that the transportation interests today represented the greatest industry in the United States—transportation, and it was to be expected that taking the initiative in a movement like this, stimulating the entire transportation to a "thought for apples," really meant something. It was creative work. He then outlined some important features of the apple industry, pointing out its tremendous volume, showing that today in the state of Washington alone six-and-a-half millions of apple trees were planted and 91,500 acres devoted to apple culture, the actual number of trees bearing fruit being 6,000,000. He also referred to Oregon and Idaho, and their heavy share in the industry, Oregon today devoting over 39,000 acres to apples.

W. F. Gwin, general manager of the Northwestern Fruit Exchange followed Mr. Robinson with a pointed talk on the apple industry in general. He complimented the Transportation Club on their Apple Day idea, declaring that the industry is served potently by all

efforts of this nature and that the industry had reached such vast proportions that service in it or to it now amounted to more than mere personal interest—its importance touched every department of our Northwest life. He said it was perhaps not generally known that today the Northwest apple crop was over twice the volume of the California orange crop, that the apple crop of the United States ranked ninth in importance as an agricultural product.

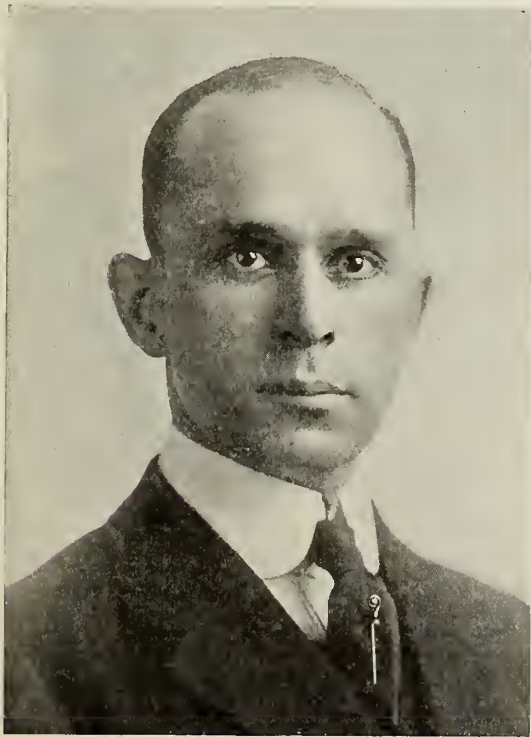
The event was made interesting by the presentation of motion pictures showing the development of the apple industry from the days of the Indian, the first series of pictures showing the development of irrigation projects, the planting, cultivating, spraying, irrigating, picking and packing of the apples, and also loading, icing and transportation. A second and third series of pictures displayed the marketing and advertising of the Northwest apple, and included views of the offices of the Northwestern Fruit Exchange, the exhibit being explained by Fitzherbert Leather, advertising manager. Decorations were supplied by the advertising department of "Skookum" apples, and the guests enjoyed an apple feast, "Skookum" apples being served to all.

Referring to the idea of Transportation Apple Day, F. W. Graham, president of the Transportation Club, stated that the apple industry was now the third industry of the State of Washington, and rapidly assuming large comparative importance in Oregon and Idaho. The movement over the rails of the enormous apple crop was of first importance however, since apples require refrigeration and prompt handling, while lumber and grain involve no such difficulties.

"The transportation interests are as much interested as the growers in this industry," said Mr. Graham. "We want them to feel that we know our responsibility, and indeed during the season of transportation of apples I think I make no mistake in saying that where the growers are anxious for the safe and fast transportation of the crop we are anxious and straining every nerve to allay their fears—to do the mortal best possible. Our Transportation Apple Day is a slight token to the industry of our appreciation, and also a conveyance of our determination to foster it and conserve it, so far as we are able, with our utmost endeavor."

Among the guests of the club present was Reginald H. Parsons, president of the Seattle Chamber of Commerce and Commercial Club and president of the Northwestern Fruit Exchange. Mr. Parsons is also the owner of large orchard acreage.

On December 22 W. H. Paulhamus, president of the Puyallup and Sumner Fruit Growers' Association spoke before the club on "How transportation employes can best serve the public." As usual Mr. Paulhamus handled his subject in a vein that was both entertaining and instructive.



W. F. GWIN

General Manager of the Northwestern Fruit Exchange, who says that the Northwest apple crop is now twice the volume of the California orange crop and has become so important that it touches every phase of industrial life in this section.

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APPLES, CHERRIES & STRAWBERRIES.**

The Waldron Beauty Apple

The Waldron Beauty apple, an illustration of which appears on the cover page of BETTER FRUIT this month was propagated by G. W. Waldron of Oregon City, Oregon, and is the result of one of those accidents that some times occur in horticulture. In telling how he came to grow this apple Mr. Waldron says that several years ago he grafted some seedling trees and there was one that failed to grow, so he left it as a seedling. When it bore fruit the apples were of exceedingly fine quality and color.

The flesh of the Waldron Beauty is extremely white and of fine flavor and the tree of vigorous growth. In the Willamette Valley where it originated the fruit matures the latter part of September at a time when the early fall apples have been shipped and the early winter varieties are not yet ready for the market.

On this account it is believed that the Waldron Beauty is a very valuable new variety and will take a place among the standard apples of the Northwest.

Alfalfa and Walnut Orchards

Alfalfa can be grown in a walnut orchard with good results, provided there is sufficient water to keep the soil moist. Where water has to be lifted to the surface long distances it will be better not to plant alfalfa in a walnut orchard. Instead, during the summer the soil should be cultivated frequently to conserve the moisture.

BETTER FRUIT

An Illustrated Magazine Devoted to the Interests
of Modern Fruit Growing and Marketing.
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Worm Extermination.

To the fruit grower the possibility of exterminating the worms should be a fascinating subject. From time immemorial worms have been the bane of the grower of fruit either in a small or a large way and in later years when the orchard industry has reached such huge proportions the loss from these insects which particularly infest the apple has run into many millions.

At first glance a plan to entirely rid large orchard districts of these pests seems impossible. Yet we find that in British Columbia, which now has an immense orchard development, that the extermination plan has been to a large extent a success—not through watchful waiting but through aggressive preventive measures. It is true that the codling moth is not as active in this more Northern district as it is in the districts in the United States farther south owing to the cooler temperatures at night when this moth, which is a nocturnal insect, does most of its work. But from time to time the codling moth has appeared in the orchards of British Columbia. When this has happened strict quarantine measures have been adopted in the sections affected and we have good authority for the statement that it has been exterminated in these districts.

Other evidence is to the effect that in a district in Washington which was badly affected but where the spraying operations were carried on under the direction of experts and thoroughness of application made the watchword that the proportion of wormy apples was decreased to a very small percentage. In view of these results the suggestion comes of itself that more drastic measures in spraying and inspection methods should reduce the losses from worms to an almost negligible amount. In any event a widespread operation of this character is well worth a trial.

Home Grown Fruit Stocks.

The ravages of the war to European horticulture is affecting this country more closely than was at first thought.

We find that although the lessened production of deciduous fruits in France, which has heretofore been a light buyer of American fresh fruits, should create a greater market for fruit products from this country, that the propagation of fruit stocks on which to grow fruit of which France has been a large shipper to America, has practically ceased. Of the two situations the latter is considered the most important by American fruitgrowing specialists in view of the demand for a greatly increased production of all fruits in this country.

The growing of disease free and vigorous fruit stock is one of the most important phases of horticulture. With the exception of peach stock and a few varieties of apples very little fruit tree stock has been propagated in America. One of the first sections of the country to realize the importance of taking up the matter of home grown fruit stock was California and experiments will be made there next year to determine its possibilities in that state.

It is also proposed by the United States Agricultural Department to make a survey of the United States for the purpose of selecting those sections of the country where this industry can be tried out most successfully. With the variety of soil and climate that can be found in America it would seem that should be no bar to growing large quantities of these stocks successfully. The United States as the greatest all around fruit producing country in the world ought to produce its own stocks.

Growing Fruit for the Home.

A statement recently sent out by the United States Department of Agriculture should find its way into every home where there is an opportunity to grow fruit. The statement says:

Well-ripened, sound fruit is healthful. It is also a valuable food. It should form a part of every meal, fresh when possible, or dried, canned or otherwise preserved.

Home-grown fruit is desirable—

Because it reaches the family fresh and in the best possible condition.

Because the family has fruit of which it would often be deprived if it had to be purchased.

Because, if the proper varieties be selected, a continuous supply of fruit of superior quality may be secured, regardless of market prices.

Because any surplus may be sold without difficulty, or may be canned, evaporated, or otherwise conserved for use when fresh fruit is not available.

Because the care of the home fruit garden provides for spare time congenial and profitable occupation which is in reality recreation for those who enjoy seeing things grow.

Thousands of persons who have the opportunity grow fruit for home consumption either neglect to set out the trees or plants or if they have them fail to give them the care that brings success. Formerly one of the cheapest commodities used in the household, fruit has now taken its place in the list of high priced foods and its production for home use means a large saving in the family living expense. Even the grower of fruit in small quantities can now dispose of any surplus at a profitable figure. Home grown fruit should no longer be regarded as an incident in family life but as a distinct asset.

Grape Fruit Sells High

A record high price for California grape fruit was recently paid for a car of 535 boxes shipped from Woodlake. It brought the growers, Thomas Edmiston, Henry Hein and Capt. Lancashire \$6.00 for fancy and \$5.00 for standards f. o. b. shipping station.

Failed to Spray.

Sez Farmer Bill, it's one darn thing, or it's three or four,
There's worms and flies and bugs galore,
And smut and blight and anthracnose,
And take-all, scab and other foes.
Some of them fly, and some just crawl,
And some don't even move at all,
But whate'er the shape or name may be,
They manage to ruin our crops, by Gee!
—Marion County (Mo.) Farm Bureau News.

What the Newspapers Interested in Fruit Are Saying.

"Nil desperandum" is the spirit that prompted many of our growers to forego sleep rather than permit the fires in their apple houses to die down during the cold spell.—*Hood River News.*

Apple holdings in cold storage are considerably in excess of last year, according to government reports. Barreled stocks are only slightly larger than a year ago, but there is a big increase in boxed apple holdings. The big Northwestern crop of apples is responsible for the heavier stocks of boxed fruit, there being two and three-quarters millions of boxes more held in storage now than a year ago.—*The Packer.*

Want to live to a ripe old age? Well, follow the example of Dan B. Day of Lincoln, Kansas, who passed his eightieth birthday recently and is more vigorous and active than most men of fifty. Mr. Day declares that his vigorous health is due to his eating from three to five apples every evening before going to bed. He enjoys his apples and lots of them, Mr. Day declares, just as much as he did seventy years ago, when he began the practice.—*Oregon Journal.*

Five thousand dollars per acre is the amount William Hanks of the Naches figures on making from a new variety of strawberry he has developed. With the average yield of this fruit 250 crates, he claims his variety will produce 1,000 in a single season. He has never, he says, received less than \$5 a crate. He has fifteen acres set to the plants between young apple trees. This season he preserved 1,000 gallons of the fruit.—*Yakima Valley Progress.*

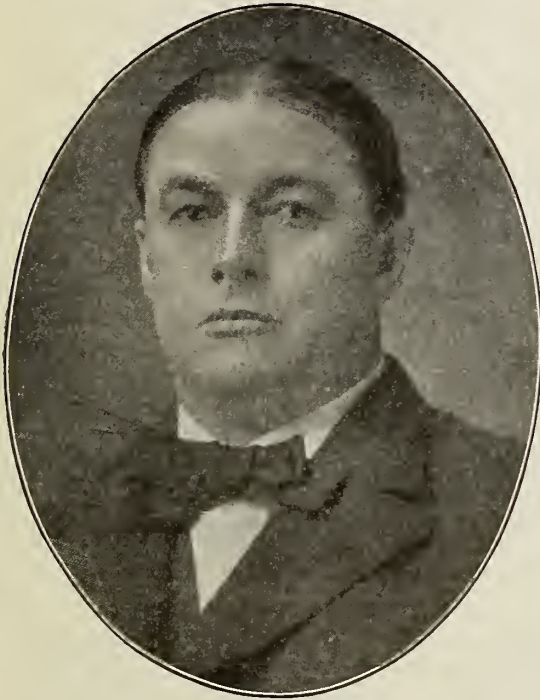
The shipping of immature fruit in the end defeats its own object, which is presumably to get ahead of the legitimate market and reap the benefit of extra high prices. While the public may be taken in by such fruit for a very limited period, the result is to demoralize the market, and all fruit growers suffer for the sharp practice of a few who cannot be content to let their product stand on its merit.—*American Fruit Grower.*

As we have traveled over the South these many years, we have often wondered as we saw the weatherbeaten, paintless houses whether or not the owners of those houses were mad at the paint dealer and manufacturer. Weatherbeaten, paintless houses are not pleasant to the eye, and what's far worse, unpainted buildings exposed to the weather will decay and bring a repair and lumber bill in about half the time that a house kept well painted does. Most of us look on the cost of good paint as an unnecessary expense, something to spend money for when everything else imaginable has been bought and paid for.—*Southern Ruralist.*

These are days of commercialization. Everything is commercialized. It is a bad omen, but we must be optimistic enough to know that it cannot go on forever. Germany's ruin was simply due to her placing commercialism and prosperity before God. High prices of the necessities of life have made us almost as selfish as beasts. The result is natural. It is a poor tribute to a human being to say only of him when he has left this world that he was a good provider for his own family. Such a tribute may be said of every bird that flies and every beast that stalks the earth. Beasts have just as great family ties as the human family. A human being rises above the beast when his unselfishness extends beyond his own family, and causes him to recognize the brotherhood of man.—*Southern Fruit Grower.*

Extends Operations of Small Fruit Industry

W. H. Paulhamus, pioneer in launching propaganda as to the opportunities in the Northwest for the small fruit-grower and president of the Puyallup and Sumner Fruit Growers' Canning Company of Puyallup, Wash., is still a firm believer in future prospects for a greatly increased production of berries. Having brought the Washington branch of the organization he represents to a high state of efficiency and success Mr.



W. H. PAULHAMUS

President Puyallup and Sumner Fruit Growers' Canning Company, which is extending its operations in small fruit industry.

Paulhamus entered the Oregon field early last spring and established a large and modern canning and berry handling plant at Albany. This field was selected on account of the large acreage of soil in the vicinity of Albany adapted to berry growing and also due to the fact that a large number of fruit growers there were willing to insure sufficient tonnage to make the plant a success.

The Puyallup company now plans to widen its operations in Oregon by establishing another cannery to be located at Salem. In connection with this movement growers of 300 acres of loganberries recently held a meeting at Salem and formed a tentative organization. W. R. Scott, Oregon manager for the Puyallup company addressed the

meeting. Mr. Scott said his company had great faith in the future of the Salem district, and it was the purpose of the corporation to erect a cannery there in the event sufficient acreage was available. He declared that there was no danger of low prices for at least another year, for the reason that the demand for berries was fast increasing, both in the local and eastern markets.

During the past season the Puyallup and Sumner Fruit Growers' Canning Company handled in the neighborhood of 20,000,000 pounds of berries at its Washington plants, the larger part of which were sold before the product was ready for shipment. This tonnage is expected to be greatly increased this year at the Puyallup and Sumner plants while a large output is looked for by the company from its Oregon enterprises.

Another Montana Man Resigns

Montana is again called upon to regret the retirement of one of its prominent men in horticulture owing to the decision of Mr. A. L. Strausz to sever his connection with the Montana State Board of Horticulture.

Mr. Strausz has served as State Horticulturist since June, 1917, and during that time has done much to assist and encourage the fruit growers in Montana, and has won the respect and confidence of every one who has had the good fortune to meet him. Previous to his appointment as State Horticulturist, Mr. Strausz was for three years instructor in horticulture at the State College of Washington. He graduated there in 1913 and in 1917 was given the degree of master of science.

As proof of the faith which Mr. Strausz has in the fruit industry he has purchased a tract of bearing orchard in the Yakima Valley near Yakima, and will in the future direct his efforts to the production of apples and pears.

Montana Fruit Men to Meet

The Montana Horticultural Society will hold its annual meeting at Missoula on January 21, 22, 23, 1920.

One of the most important subjects up for discussion at this time will be the "Standardization of Grades for the Northwest." The Department of Agriculture has worked on this problem for several years and the grade rules which they have formulated were adopted at the Grade and Pack Conference held lately at Spokane and will be in force in the State of Washington for the coming year.

Jam Shortage Predicted

A report from the Canadian Trade Commissioner, stationed at Manchester, England, bears out the statement recently made by the American trade representative in London, regarding a shortage of jam in the United Kingdom.

The Canadian commissioner says that "though there may be fair quantities on the market during the next three months, it is anticipated that a serious shortage will be experienced from January next until May. The high prices of fruit ruling this Summer made it impossible for jam makers to lay down large stocks. For example, raspberries, which were at the high price of \$225 a ton in 1918, rose to \$425 this year; black currants advanced from \$300 to \$525; red currants rose from \$160 to \$250; gooseberries advanced from \$135 to \$230; and strawberries rose from \$200 to \$480. To these enhanced values of the raw material had to be added the increased cost of labor, coal, jars, bottles, etc."

Bees and Fruit

Fruit growing and beekeeping belong together, and fruit growing absolutely requires bees for best results. The bees do the indispensable work of pollinating the blossoms of most all fruits, insuring larger yields and better quality. Every up-to-date fruit grower knows this. Beekeeping is easy to learn, small expense to start. Out of our 50 years' experience in beekeeping we can tell you how. Better fruit and a crop of honey will be your profit. Write us today, asking for our two handsome booklets, "Bees and Fruit" and "Beekeeping for Pleasure and Profit." Tell us if you have ever kept bees.



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SEND THE COUPON on opposite page. Read these *new* facts on spraying now. You can't expect your apples, peaches, pears, plums, grapes and other fruit to live and produce profitable crops if infested with San Jose Scale, Codling Moth, Scab, Blotch, Bitter Rot and other deadly, life-sapping diseases and pests. You can't expect your potatoes to develop and grow — your Hogs to put on money-making weight — or your Hens to lay — if eaten up and tormented by bugs, mites and lice! Authorities say that the deadly ravages wrought by these ruinous, destructive pests cost farmers untold millions each year.

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Learn how spraying will enable you to drive these pests from your farm. How spraying will save your part of this tremendous loss and add hundreds—even thousands—of dollars to your profits each year. Send the coupon for all the facts now.

* * * *

There is a type of Hayes Sprayer for Orchards, Gardens, Field Crops, Vineyards, Nurseries, Trees, Potatoes, Cotton, Flowers, Alfalfa, Sugar Beets, Disinfecting Hogs and Poultry, Whitewashing and Cold Water Painting. Whether you need the great Triplex Fruit-Fog Power Sprayer or the smallest Garden Atomizer, you'll find it in the Hayes Line.

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Fill out and mail the coupon on opposite page now. Tell us how many trees you want to spray and how old on the average. Also other uses you have for your sprayer. We'll tell you where and how you can get the style of Hayes Sprayer best suited to your needs, and its price. We'll also send our Big New Book of Hayes Sprayers and our Valuable New Spraying Guide FREE. Send the coupon today.



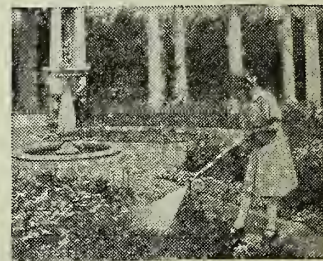
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The Hayes Wheelbarrow Sprayer is
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Sprayers for All Purposes

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Send Coupon for Secret of "Fruit-Fog" Spraying

LEARN why Fruit-Fog is the greatest boon to Fruit Growers ever discovered. How mighty yields that are almost unbelievable are being produced in Fruit-Fogged orchards. This is because Fruit-Fog—the vaporous super-spray—is the only spray *fine enough* to seek out and kill the *hidden* pests.

These *hidden* pests are the millions of insects that infest the microscopical niches and crevices in bark, buds and foliage, where no heavy, coarse low-pressure spray can reach. These hidden pests cost fruit growers untold millions each year. They sweep away fine fruit worth fortunes in a single season. Yet Fruit-Fog will entirely *exterminate* them. Fruit-Fog will add 100% to 5,000% to your yield and your profits this year. Send the coupon and learn *all* the facts.

Hayes Fruit-Fog Gun

World's fastest spraying apparatus. The only gun which combines great speed with the thoroughness of Fruit-Fog. One man handles capacity of big Power Sprayer. Simple twist shoots long spray to top of tallest trees, or wide spray for close-up work, or shuts off tight—preventing waste of solution between trees. Guaranteed. Write for details.

Hayes Hand Barrel Spray Pump

Hayes Platform Duplex Hand Sprayer

Hayes High Pressure Triplex Power Sprayer with truck

"Fruit-Fog" Sprayers With Famous Engine

Fruit-Fog is produced by Hayes **guaranteed** 300-lb. high pressure and the Hayes Scientific Nozzle. Because of its **vapory fineness**, Fruit-Fog has wonderful **adhering power**. No drops form—no solution wasted—no buds or leaves knocked off—as with heavy, coarse, low-pressure sprays.

Hayes Fruit-Fog Sprayers are skillfully designed and finished. Every part is positively standardized. They give enduring service and greatest efficiency under high pressure. To insure the best possible engine service, we have selected the famous Fairbanks-Morse "Z" Engine after countless comparative tests.

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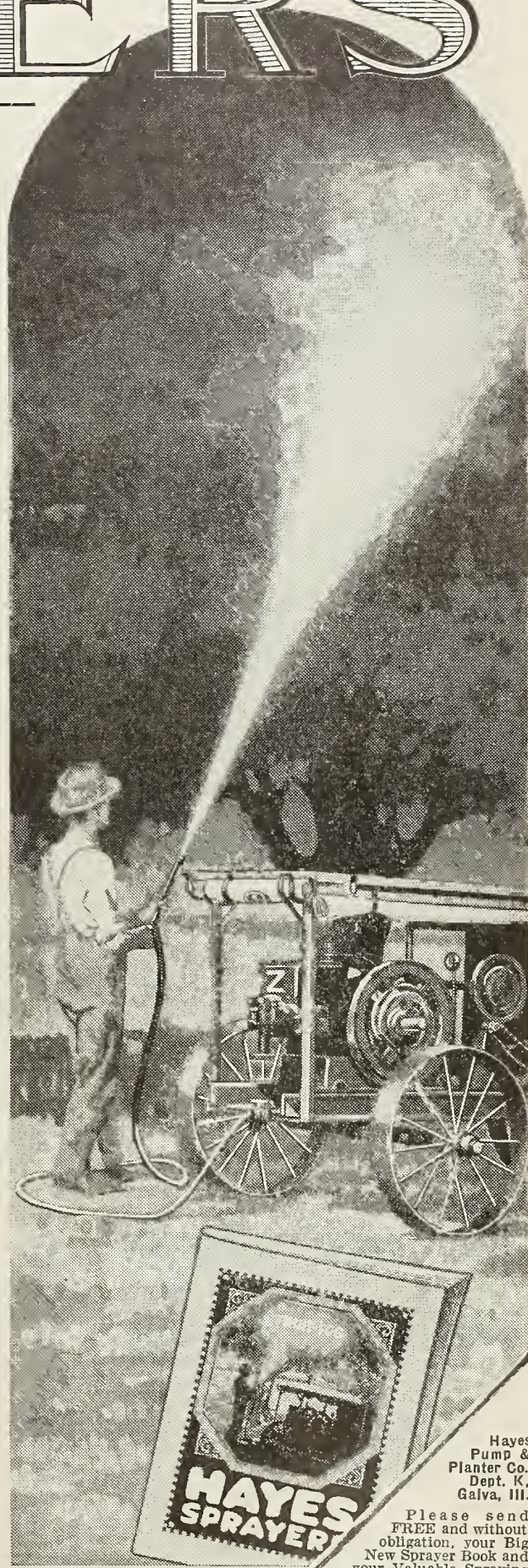
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Timely Topics and Advice for the Fruitgrower

Good cultural methods and correct soil management will do more than anything else to prevent many of the diseases of fruit trees. This should be remembered by orchardists who are inclined to resort too much to artificial means which take the form of remedies rather than preventive methods.

Tile drainage has been found to correct many of the areas of grayish-white damp soil quite common throughout Ohio on which farm crops have never been profitable, according to soil specialists of the Ohio Experiment Station and Ohio State University. According to specialists there is no important cause for lack of crop production, except that the soil has a low content of organic matter. Fertilizers do not bring response in these soils. When tile-drained thoroughly the increased yield is at once noticed. Under drainage acts as an aerating agent and thus allows the roots to penetrate more easily into the subsoil, and after systematic crop rotation and fertilization is carried out, these areas become darker in color and quite as productive as the alluvial soils.

Heart rot is bound to get in wherever sunscald cankers are not taken care of or good-sized branches are cut off without disinfecting the wood, according to Dr. S. M. Zeller, assistant pathologist at the Oregon Agricultural College. Once started heart rot is difficult if not impossible to control. The only safe way is to prevent the start of the trouble by disinfecting every wound made on the body or main branches of the tree, according to Dr. Zeller, who recommends a coating of Bordeaux paste, and in case of large wounds treating with the Volck method of driving copper nails into the exposed wood.

A dust spray formula recommended by a successful orchardist is 100 pounds of dehydrated lime, 20 pounds of flowers of sulphur, 5 pounds of powdered bluestone and 5 pounds of Paris green or 4 pounds of powdered arsenate of lead. The cost of applying the dust spray is considerably less than that of the liquid although the expense of the dry material itself is greater.

Damage to young fruit trees during the winter by rabbits and mice may be best prevented where these pests cannot be gotten rid of entirely by the use of tree protectors. The best of these protectors are made of galvanized iron wire, which lasts for several years, and can be purchased at a reasonable figure.

Studies in comparison of spring and fall-plowed land made by soil specialists in Ohio show that early spring-plowed land contains practically as much moisture for crop production as fall-plowed soil. Fall plowing is regarded as essential where labor conditions do not permit of spring plowing, or where it is necessary to destroy insects in infested lands. With spring plowing specialists point out it is possible to use a cover crops on land after other crops are harvested.

The time to remove peach tree borers is in the fall. At this time the borers feed under the gum for a few weeks before entering the bark. If the gum is scraped away the borers are removed. The holes of those who have entered the bark can be easily seen and they can be removed by hand with a sharp knife. Except when there is a freezing temperature the borers remain alive during the winter and once beneath the bark are much more difficult to remove in the spring.

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Northwest Notes from Here and There

OREGON.

Figures obtained from the packing houses at Roseburg, Oregon, indicate that the prune crop of Douglas county this year will total 7,000,000 pounds. The prices received by the prune growers of this section this year were the highest on record although the crop was not as large as in some former years.

Learning that frozen apples were being shipped from some points in Oregon during the past month the railway administration took steps to protect the roads against claims for damages for the transportation of this class of fruit. To secure information in regard to these shipments inspectors were placed at the shipping points by the railroads.

A tractor demonstration that caused a good deal of interest was held in Hood River during the month. Demonstrations of plowing and orchard cultivation were made by small models. Many apple growers who are contemplating the purchase of these machines in the spring were in attendance.

While the extreme cold weather which hit Portland about the middle of December, lasted the apple trade was almost entirely suspended. Shippers were warned that they would make shipments at their own risk. The situation during the cold spell in the Pacific Northwest was similar to that in the Portland district and apple shipments in this territory were pretty generally tied up.

Under the direction of Prof. R. V. Wright, Hood River is this winter having a short course in agriculture. Prominent fruitgrowers and representatives of the Hood River Experiment station are assisting Professor Wright in the work.

Newberg made its entry as an apple shipping center this year by marketing 100 cars of apples, a part of which were sold for export to England and the Scandinavian countries. To handle the rapidly growing crop in this section a large cement block apple warehouse and packing plant is now in use. The packing plant contains all the latest apparatus including power graders and gravity conveyors which facilitates moving the crop rapidly. On this account Newberg growers were able to market their apples early and experienced very little difficulty from the car shortage. The varieties grown in this district are the Spitzenberg, Newtown, Jonathan and Wagener.

Medford about wound up its shipment of an 800 car apple crop December 15. While this section has experienced some damage from the cold spell it is stated that not over 20 cars of fruit were frozen and these were in the storage houses of the owners on their orchard properties. Prices for apples in the Medford district this year have been more than satisfactory.

A box of apples of the Red Cheek variety found in a cellar in Portland which was recently being cleaned had been there since the winter of 1917. The apples were in a good state of preservation and are causing Oregon growers to again call attention to the long keeping qualities of Oregon apples. The fruit was grown at Mosier.

Investigations at Hood River where the temperature dropped to 27 below zero led to the belief that little damage was done by the December freeze to apple orchards although it is feared that the peach trees in that section were injured.

Stanfield marketed a crop of apples this year that is expected to return growers \$75,000. The varieties produced in this district are Rome Beauty, Jonathan and Winesap and 50 per cent of the crop was packed out as extra fancy. The Stanfield Growers' Association shipped 45 cars of the crop.

Besides the large shipment of apples marketed by the Dufur Orchard Company which owns one of the largest single orchard tracts in the world, other growers in that district are reported to have shipped nearly 20 cars of apples each this year. The Dufur Orchard Company's holdings which came into bearing for the first time on a commercial basis this year yielded 300 cars of fine fruit.

A report from Salem is to the effect that a cannery at Albany has offered the loganberry growers of Marion county 8 cents a pound for

their next year's crop of fruit. The offer is said to carry with it the guarantee that the purchasers will meet any advance in the market price above the 8 cent quotation.

The membership in the Oregon Growers Co-operative Association which has been growing rapidly is reaching into all parts of the state. Contracts with the organization now include a fruit acreage of over 15,000 acres. Salem growers alone have come into the association to the extent of over 3,200 acres while over 1,000 acres of prunes in the northern part of Yamhill County will be controlled by the organization.

At the recent rate hearing held in Portland to consider the increase in freight rates on apples it was stated that the new rate means an increase to apple shippers of \$96.37 a car on fruit shipped to Chicago. The testimony submitted by the representatives of the fruit-growing industry in the Northwest was to the effect that the new rate is discriminatory and should therefore be reduced.

WASHINGTON.

Fifteen million dollars is the estimated return to growers of the Yakima Valley for their 1919 apple crop. The total income in this valley this year from all agricultural products is estimated at \$40,000,000. The return from fruit and other products of the soil in the Wenatchee district is estimated at \$20,000,000.

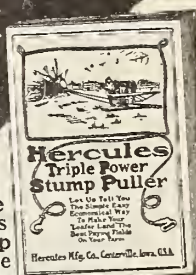
The Skookum Packers' Association is understood to be contemplating the construction of a warehouse at Spokane to carry several hundred cars.

At a recent luncheon of the Spokane Chamber of Commerce a feature was the introduction of Rainier apples for all present. The

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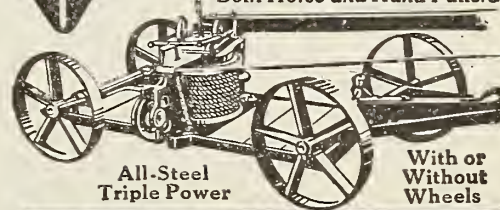


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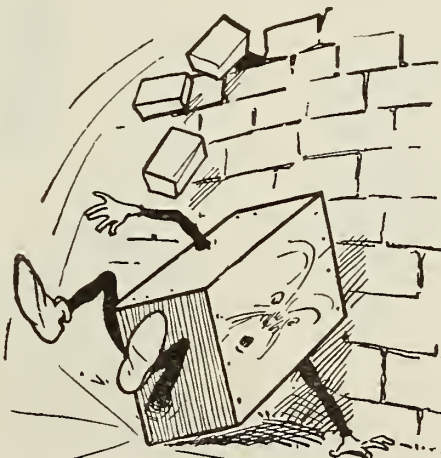
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Humpty Dumpty had a great fall;
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Prospects for American Fruit in the United Kingdom

By Edward A. Foley, American Agricultural Trade Commissioner at London

BEFORE discussing the fruit situation in the United Kingdom and its relation to the prospects for American fruits, I wish to call attention to the decision of the British Food Controller to limit the retailers' profit on fruits. This regulation is not yet in effect in all parts of the country. Just what the margin of profit will be was left to the Food Control of the various sections of the country. At the time of writing this report (October 24) the profit allowed the retailer in the Birmingham section had been set at 33½ per cent—that is, fruit must be sold to the consumer at not more than 33½ per cent above the maximum price allowed the wholesaler.

This margin of profit would be probably more than fair if it were not for the fact that perishable products deteriorate and rot, and such a profit may be insufficient to cover the losses from such sources.

If the other districts follow the lead of Birmingham, and I have reason to believe that they will, a radical change will be made in the retailing of American and other fruits. The retailer will buy a week's supply of apples and a smaller supply of the more perishable fruits; he probably will not take any chance of loss through deterioration. This will throw the stocks back on the wholesaler, who has in most cases no storage facilities and who is also bound by the maximum price fixed when the value of the pound sterling in New York was around \$4.60. It may also disturb the equilibrium of the markets. Under the old system the re-

tailer fell back on his accumulation in the cellar when there was a shortage in the wholesale market. As he probably can not afford to carry a reserve supply under the new system he must go without supplies during the shortage. This regulation will also tend to reduce further the price to the producer, as the wholesaler must carry the loss by deterioration and will recoup this loss from the sale of the fruit, which he must sell at the fixed maximum price, or lower. This condition is one that should be watched very closely, as the margin between profit and loss has been very close this year. It might be well to notice that the era of high war-time wages is over and that there is considerable unemployment. These two factors were absent in last year's market conditions.

Apples—It is difficult to get a very accurate estimate of the 1919 apple crop of Great Britain. However, 230 odd inquiries showed that 100 placed the crop at normal, 80 over the average, and 50 under the average. The supplies are pouring into the London and other markets in large quantities at lower prices; hence, it is safe to say the crop is larger than has been produced for some years. The prices of English cooking apples range from \$1.50 to \$2.10 per bushel; dessert varieties, \$2.10 to \$4.20 per bushel. Many of the most careful importers are dubious of the success of the importations of apples into Great Britain this year. At the time this report was written American apples could be bought for 60 cents per box less in Liverpool than in Boston.

American barrelled varieties have been ranging from \$8.35 to \$14.10 per barrel, but in many cases the fruit has been out of condition, and the prices, therefore, have been unsatisfactory. However, fruit arriving in sound condition and well graded brings the maximum price. A few consignments of American boxed apples have arrived and have sold for an average of \$3.75 per box.

Considerable quantities of apples from Nova Scotia have been arriving, the prices ranging from \$5.20 to \$13.55 per barrel. A great many of these apples also have arrived out of condition and have brought unsatisfactory prices. With a reported Nova Scotia crop of from 1,000,000 to 1,500,000 barrels, the majority of which find their way to the English markets, and a large domestic crop, careful attention must be paid by American exporters to this market, especially until the absorption of the home crop.

I am not at all pessimistic about the outlook for American apples in this market, but I do want at this time to urge shippers to be careful of conditions here, especially as the margin of profit is so close. And, above all, must Americans be careful of their pack. High class, well graded apples will bring the maximum price, but ungraded stock falls into competition with the ungraded home stock and is slaughtered.

And there is a lot of this ungraded home stock. Every huckster's cart around London is filled with it.

Pears—British pears range from \$2.10 to \$6.67 per bushel; American pears from \$6.25 to \$7.30 per box. The condition of many California Bartlett pears left much to be desired. Those on the London market really were not fit for sale. Some pears, however, arrived in excellent condition and brought a good price.

Grapes—Large quantities of Almeria grapes are usually absorbed in the British markets. Late heavy frosts, however, have affected the shipping and carrying qualities of these grapes and their importation has about finished. It is quite possible that the American grape could be successfully introduced at this time. A small shipment of Malagas from California has recently arrived in good condition. They have only the competition of the hot-house muscatel at \$0.62 to \$2.50 per pound; therefore, if the American grape can be landed here successfully, there is

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every reason to believe that a successful import trade can be established.

Oranges—The orange situation is also interesting and encouraging. It is reported on good authority and it is in fact generally conceded that the Spanish crop in Valencia is only a moderate or a light to moderate one. The crop in the adjoining districts, Murcia, Denia, Gandia, etc., is reported to be good. The Spanish growers insisted on high prices during the war and are maintaining them now. These conditions should allow American, especially California, oranges considerable scope at remunerative prices. The arrivals of Murcias so far have realized \$5.00 to \$7.30 per half box; Valencias \$7.90 to \$9.00 per half box.

The Jaffa crop is only a moderate one, estimated at 500,000 to 750,000 boxes. This is said to be about one-eighth of the 1914 crop. The shippers are here trying to obtain advances on this crop, as the cost of material and labor there is very high. The freight is expected to be about \$1.70. It is anticipated that one-half of this crop will be used for the demands of Turkey and Egypt.

As in apples and other fruit so in oranges the study of market conditions is a prerequisite of success. A high price in a market indicates a shortage on the market on the auction day but is absolutely no indication of the number of boxes of produce in transit to that market. Uninformed American shippers frequently noticing these prices ship large consignments to the market only to find that a good many others equally uninformed have done the same thing. The inevitable result has been a glut, and the fruit has been sacrificed to the hucksters to get whatever was possible out of the consignment.

Northwest Beekeepers to Meet

The Inland Empire Beekeepers' Association will hold its first regular annual meeting at the Davenport Hotel in Spokane, Wash., Jan. 26 and 27, 1920. Preparations are being made for the best and largest meeting of beekeepers ever held in the great Northwest.

It is expected that there will be present leading beekeepers from the East and South, including representatives of the older bee-papers and bee-supply dealers.

Beekeeping in the Northwest is going forward with wonderful strides, and this section of the country is destined to surprise the older portions with its annual honey crops. Come to the convention, Jan. 26 and 27, 1920, and help make it a most profitable meeting of beekeepers.

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fruit is a new variety produced by W. W. Scott at his Fruitvale ranch. Some persons profess to believe the Rainier is a sport from the Delicious and the Hubbertson Nonsuch. It has the spiciness and juice of the former and resembles it in shape while in appearance it favors the latter. As a keeper, however, the Rainier is claimed to far excel either variety. The Yakima County Horticultural Union says the Rainier has been sold for consumption in July and August and that it is an extraordinarily long keeper.

Canada is buying virtually no American apples this year, according to P. R. Parks, general manager of the Spokane Fruit Growers Company. In the past the northwestern provinces have been large consumers of Washington boxed apples, particularly the "C" grade. The Okanogan districts of British Co-

lumbia have big orchards in bearing this year for the first time and are supplying the northwestern Canadian trade. The policy of "Buy-in-Canada" is being vigorously pressed since the war. American apples pay a duty of about 40 cents a box when they cross the line. "Prices are not quite as high as they were earlier in the season because of indiscriminate shipping, but they are higher than they were a year ago, barring the fancy figures received for a little stuff at the end of the season. The growers will realize handsome returns this year again, although the crop is slightly under that of a year ago," according to Mr. Parks.

A pile of 35,000 boxes of apples was one of the sights of the warehouse district at Grandview, Wash., the pile being owned by the Washington Dehydrated Food Company, to be

used in its local plant. The company's big warehouse was also full of apples and the plant was operating night and day.

All previous estimates, as late as November 1, upon the apple yield of the state of Washington are exceeded by a more authentic approximation issued by the Bureau of Crop Estimates on December 16. The Spokane district yield is estimated at 1500 cars, of which 190 cars are yet to move. Estimates are placed on other districts as follows: Wenatchee district, 11,500 cars; Yakima Valley, 10,700 cars; Walla Walla district, 1100 cars; White Salmon district, 400 cars; and scattered points in western Washington, 500 cars. The Wenatchee and Yakima districts are estimated to have 2500 and 2600 cars, respectively, yet to move.

With orchard holdings of 1760 acres the Palouse corporation, apple growers with headquarters at Spokane, has reaped a harvest of more than 100,000 boxes of apples this season. The market has returned from \$1.75 to \$2.50 a box for fancy apples, according to J. R. Wilson, manager and treasurer. The company has packing plants at Medical Lake, Fairfield and Waverly. All products are grown on non-irrigated land. The Palouse corporation markets its fruit through the Northwestern Fruit Exchange at Seattle. During the picking and packing season an average of 325 men were employed by the company, with a daily payroll running from \$1200 to \$1500. Enlargement of the packing plant and housing facilities at Fairfield is being considered.

IDAHO.

Many Washington county, Idaho, fruitgrowers are reported by the Farm Bureau to be preparing to build "semi-underground" storage cellars for the 1920 crop. The success of these storage cellars in the Payette Valley this year where a number of them were constructed was so noticeable and productive of such good results in preventing shipments of overripe fruit; it is expected that many others will be built next year throughout the state.

The total apple crop in Idaho is now placed at 4762 cars, an increase of 1293 cars over the state's largest crop in 1917.

According to the Payette Independent Boise and Payette Valley apple orchards show no further signs of infection, and conditions indicate that the rotting and dying of trees, which were noticed in 1917, resulted from an epidemic of blight that prevailed in the season of 1915 or of 1916, says a report by E. R. Bennett, field horticulturist, of the University of Idaho extension division. Mr. Bennett based this report on investigations made in company with Lee M. Hutchins of the United States Department of Agriculture. The orchards inspected in the recent investigation were on the Boise bench and in the Emmett, Payette, New Plymouth, Fruitland, Parma districts. This work was a continuation of the investigations of the orchard work that was made in 1917.

A survey of the Lewiston, Idaho, apple season, which has just closed, by H. H. S. Rowell, prominent grower of the district, estimates the apple pack to be in excess of 250 carloads. A conservative estimate of the receipts for this year's apple crop in the Lewiston-Clarkston Valley is \$600,000. This is far in excess of previous records. This year seven packing houses were kept busy. The chief varieties raised are Jonathans and Rome Beauties, although many carloads of Delicious, Yellow Newtowns, Spitzenburgs and Winter Bananas were shipped.

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What They're Doing in California

Oroville, Cal., lays claim to the distinction of shipping the first olives from California to eastern markets this season.

Fruit shipments from the Vaca Valley, Solano county, totalled 1,045 carloads this year.

Nearly 100 students—orchardists, horticulturists and farm advisers—were enrolled in the short course in horticulture which is being held at the State University Farm at Davis, California.

One thousand dollars a day was expended in the campaign for the eradication of ground squirrels in California during the past year, says G. H. Heoke, head of the State Department of Agriculture.

According to reports received from Chico, the value of the three principal orchard crops in that vicinity this year was \$3,000,000. The crops are peaches, prunes and almonds.

With the fruit shipping season practically over, the California Fruit Distributors, of Sacramento, announce that 30,000 cars of fruit were shipped east this year, an increase of 5,000 cars over last year. The total number

of cars and contents leaving Sacramento were: Cherries, 335 cars; apricots, 425 cars; peaches, 2,800 cars; plums, 2,900 cars; pears, 4,300 cars; grapes, 19,000 cars.

The California Almond Growers Exchange, with headquarters at Sacramento, recently completed filling orders for 70 cars of almonds the purchase price of which totalled \$1,700,000. The California almond production this year broke all records, totalling 7,000 tons compared with 5,000 tons last year. The growers also secured the highest figure ever paid for almonds, the total return being more than \$3,000,000. The Sacramento plant is the clearing house for twelve other plants and 22 local stations throughout the state. It has a storage capacity of 300 tons and is equipped with bleaching machines, steam apparatus which kills pests on the shells, and other modern machinery, all automatic. Special machinery has been installed for handling "Sticktight" almonds, formerly used for hog feed, so that the growers now get from six to ten cents a pound for this kind of almonds—as much as was paid formerly for first class varieties. More than 100 persons are employed at the Sacramento main plant. The valuation of the plant is \$250,000. The eastern market for California almonds was stimulated by an extensive advertising and promotion plan conducted by the Almond Growers' Exchange.

Cannery Notes

A census of the by-product plants in Yakima county, Wash., show a total of 13, with a total consumption of 37,122 tons of fruit during the season. Of the total tonnages used 24,790 tons were apples, 2225 pears, 500 prunes, 350 cherries, 9257 peaches. The total value to growers is figured to be \$525,505. Total tonnage of fruit dried was given as 14,700; canned, 6250; vinegar and cider, 5900; jelly and apple butter, 500. Cull apples from this county used in by-products plants totaled 2212 cars, 1562 of which were used in the county and 650 elsewhere.

Libby, McNeill & Libby are to locate another large cannery in the Sacramento Valley. It will be a \$335,000 structure on a 13-acre site in Gridley.

C. G. Horner, representing Libby, McNeill & Libby, recently visited Prosser, Benton county, Washington, with a view of establishing a branch cannery, if local growers will contract enough Blenheim or Tilton apricots, Tuscan cling peaches and Royal Anne cherries to keep the cannery in operation from July 1 to August 15, annually.

The cannery at Juliaetta, Idaho, has closed with the biggest tonnage of any season since it was installed. The plant opened July 1. The output was approximately 400 tons, of which 65 tons were apples, 40 tons cherries, 55 tons prunes, 150 tons tomatoes, 30 tons pears and about 50 tons beans and other vegetables and fruits.

Bits About Fruit, Fruitmen and Fruit Growing

A recent report is to the effect that ocean freight rates on apples have been reduced. The reduction on box apples is from 85 cents to 70 cents per box and from \$3 to \$2.50 on barrels.

Winchester, Va., apple growers who had been expecting to export large shipments of apples to England in January and February are withholding them due to the advice that the English market is not promising.

According to the South African Fruitgrower there have been planted in that country 100,000 acres of oranges only a small portion of which are yet in bearing. As oranges from that part of the world are marketed in March and April they do not come into competition with the American crop. There has also been planted on the upland sections of South Africa a large acreage to apples. Both the citrus and deciduous fruitgrowers of Africa are making a close study of the methods employed in growing fruit in the United States.

Southern fruitgrowers are making a protest to the federal government against the prices of fertilizers. The Alabama Department of Agriculture recently sent a representative to Washington to take up the matter with government officials of the United States Agricultural Department.

The coöperative organization of fruitgrowers is taking hold in the east. The Frederick County Growers' Association was recently formed at Winchester, Va., with an initial membership of 100. The association as one of its first actions went on record as against a national grading and packing law, and in favor of a state law.

The Tennessee State Horticultural Society, State Nurserymen's Association and State Beekeeper's Association recently held a joint meeting at Nashville that was attended by 600 delegates. The program which contained many valuable subjects for discussion was carried out successfully. Of interest in connection with the meetings was a fine exhibit of the fruit and vegetable products of the state. Many new members were added to the horticultural association during the session and it is expected that a strong organization will be built up in Tennessee which is rapidly coming to the front in many horticultural lines.

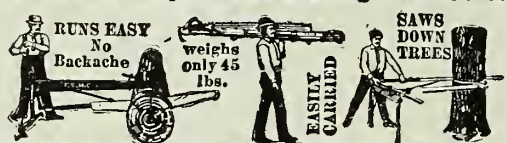
With the apple crop of the country harvested, it is apparent that control of the codling moth has been more effective this year than for many seasons past, according to deciduous fruit specialists of the Bureau of Entomology, United States Department of Agriculture. Because of the unusually high value of the apple crop, the specialists expect that the results obtained will stimulate similar thorough work another year.

ORCHARD SUPERINTENDENT WANTED

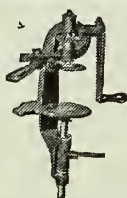
Man to act as resident manager for a prune ranch. Must have experience, executive ability, be able to keep books and be willing to do manual work on place as far as his other duties permit. Give salary, references and state when you can come.

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Codling Moth Control vs. Extermination

By P. S. Darlington, District Horticultural Inspector, Wenatchee, Washington

THE codling moth was introduced into the State of Washington many years ago and has pretty thoroughly disseminated itself over the older apple growing sections of the state.

Had it been possible during the early development of the apple industry in this state to prevent the introduction of this pest or to stamp out at the beginning any slight infestation, it would have been worth many millions of dollars to the state. In 1918 the Wenatchee district alone spent about \$500,000 in an attempt to control this pest and then took a direct loss from its ravages of about \$1,000,000. It is estimated that the State of Washington in the same year spent about \$1,500,000 in an attempt to control the pest and then took a direct loss of \$4,000,000.

In contrast to this, the Province of British Columbia had no direct loss from codling worms in 1918. In British Columbia, it has not been a matter of codling moth control, it has been a matter of codling moth extermination. Codling moth has been introduced into British Columbia. In fact, there have been some fifteen outbreaks of codling moth in the different fruit growing sections of the Province, but in each case a quarantine has been thrown around the infested area and rigid measures taken to stamp out the pest before it became widespread. Today British Columbia has 40,000 acres of

orchard, mostly apples. In 1918 these orchards produced about 3000 carloads of apples and production is rapidly on the increase and still British Columbia is a codling worm free Province with the exception of two or three small areas now under quarantine and in process of moth extermination.

The commercial apple industry in Washington is older than the commercial apple industry in British Columbia. Perhaps at the beginning of the apple industry in this state and at the time of codling moth introduction, life history and combative measures were not sufficiently well known to make a campaign of extermination practicable. Consequently, we have developed control measures rather than a process of extermination, but if it had been practicable in the beginning, I think all will agree that a process of extermination would have been much better.

If a process of extermination would have been better in the beginning, the question now arises to what extent if any can it be applied now? Let us consider this point. There are in this state certain apple growing localities of more or less limited area to which the codling moth has not yet migrated, or in which there may be as yet only a very slight infestation. I can mention a number of such localities in the Wenatchee district, which includes all of Chelan, Douglas, Okanogan and Grant

counties. Portions of the Okanogan Valley are, I believe, free from codling worms. A large portion of the Okanogan Valley is only very slightly infested. I believe the Methow Valley is practically free from worms except for a few small orchards at the mouth. The Manson district is only very slightly infested. The Entiat Valley is almost free. The upper end of the Wenatchee Valley is only slightly infested. I am not so familiar with other parts of the State, but I feel sure that there are similar areas in the Yakima district and in other portions of the state.

Are the growers in these uninfested, or slightly infested areas, going to play a game of watchful waiting while the worms slowly encroach upon them year by year until their orchards finally become just as badly infested as those in the older districts? That has been the history of all the older orchard sections in the state, and is the inevitable outcome of the sections that are now uninfested, unless some radical steps be taken to check the migration and to stamp out the present slight infestation.

Now, the question is can this migration be checked? Can the slight infestations be stamped out? That is just what British Columbia is doing successfully. Are we going to admit that we cannot do it? With proper organization and methods it can be done. Present control measures have not been successful.

I am even led to believe that it is possible to completely exterminate the

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represent a natural animal manure multiplied MANY TIMES as to the constituent elements of plant food.

MANURE is good in England, in Maine, in Washington and Oregon—this accounts for the success in Dollars and Cents Profits to the grower from the use of PUYALLUP BRAND BERRY FERTILIZER amongst members of Puyallup and Summer Fruit Associations in Puyallup Valley and the corresponding success of W. H. STRONG, at Gresham, Oregon, who writes:

"Mr. Hall, the County Agent, agrees with me that my yield was increased one ton to the acre, or a profit of \$300 per acre on fertilizing of berries."

We offer NITRATE OF SODA which we import, February deliveries, but care must be taken in the use of this fertilizer. NITRATE OF SODA unduly influences unnaturally early blossoming, makes some of the Willamette Valley soils gummy and non-porous and delays the ripening. It is not a complete fruit developer and should be used only to stimulate old, run-down orchards where legumes and manure are to be added.

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on the other hand, build humus and promote development of micro-organic life in a natural way, and are potentially rich in plant food.

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DEALERS, WIRE FOR TERRITORY

codling moth in a given area even in the old, badly infested districts. Certain observations and experiences lead me to this belief.

As early as 1907, Dr. Melander carried on codling moth work at Wenatchee. He took for his work there that year, an orchard that had been about fifty per cent wormy in 1906, and by thorough combative methods reduced the infestation in that orchard that year to one-tenth of one per cent. It is only a short step from one-tenth of one per cent infestation to extermination, and British Columbia has shown us that that step can be accomplished. If this can be accomplished, on a single orchard, it can be accomplished in a whole community, if the whole community can be handled in the same way. We are now working on this community idea on Sunnyslope. A community of about 1400 acres close to Wenatchee.

In 1918, Sunnyslope was the wormiest orchard area in the whole Wenatchee district. This community shipped that year about 400 cars of apples. The damage done by worms was estimated at 20 per cent of the entire crop, which amounted to a loss of about 80 carloads of apples, or a loss in money of about \$100,000 dollars. Such a loss as this

has an effect on the growers similar to the effect of the loss of a great battle on an army. It hurts morale. It has a tendency to make the grower skeptical and to lose confidence in himself and tried methods of codling moth control. Fortunately, however, we had one good example in Sunnyslope in 1918. During the winter of 1917-18 a certain grower in Sunnyslope asked me if there was anything he could do to get rid of the worms. He felt that he had done everything that he possibly could do, but still had suffered a loss from worms of 35 per cent for three years straight running. He was becoming discouraged. I promised to give him some special attention during the season of 1918 and to see if we could not help him get rid of his worms. His orchard lay on three different slopes. We made it a point to determine spray dates for these different slopes and made it a point to be present each time he sprayed to see that his equipment was right and that the spraying was properly done. The consequence was that in 1918 when all of Sunnyslope averaged 20 per cent worm infestation, this man had just 1½ worm infestation.

In the spring of 1919 I called a meeting of growers in Sunnyslope for the

purpose of discussing the codling moth situation. I emphasized to these growers the fact that the codling moth could be controlled and cited the example of this one particular grower who was present at the meeting to substantiate my statements. I explained to these growers that if, by giving one grower special attention straight through the season, we could help him reduce his worm infestation from 35 per cent to 1½ per cent in a year like 1918, I could see no reason why, if we gave each individual in the community the same special attention and could get them all to give us the same coöperation why we could not materially reduce the worm infestation of the whole community. However, there were not sufficient funds available for that kind of service, and if the growers wanted that kind of service it would be necessary to raise the funds in the community. It seemed to me that if we could put a man in that community to give each grower in the community special attention and would be able to reduce the infestation even from 20 per cent down to 19 per cent that it would pay the salary and expenses of the man several times over, and I felt confident that a very much greater reduction than that could be made. At this meeting, the Sunnyslope growers voted to assess themselves \$1.00 per acre for the purpose of putting on this extra man, and appointed a committee to collect the fund. The funds were collected and the special man was put on.

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We offer direct from nursery to planter, subject to stock being unsold, the varieties listed below. Our trees are guaranteed to pass government inspection and to arrive in prime condition, subject to penalty of replacement without charge.

APPLE—	Baldwin	Delicious	Rome Beauty	King David
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APRICOT—Superb

Other varieties of peach and limited quantities of other varieties of apple.

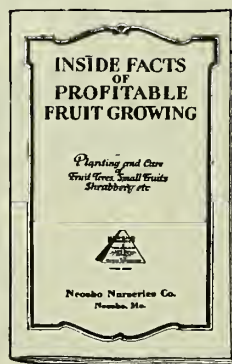
Lowest net prices f.o.b. Neosho, cash with order and subject to change without notice.

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	5/16 to 7/1655	.45	.40	.35	.30
	7/16 to 9/1665	.55	.50	.45	.40
	9/16 up75	.65	.60	.55	.50
2-yr.	1/2 to 5/865	.55	.50	.45	.40
	5/8 to 11/1675	.65	.60	.55	.50
	11/1685	.75	.70	.65	.60
	* 3/4 up95	.85	.80	.75	.70
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PEACH—	Under 5/1665	.55	.50	.45	.40
	5/16 to 7/1670	.60	.55	.50	.45
	7/16 to 9/1675	.65	.60	.55	.50
	9/16 to 11/1680	.70	.65	.60	.55
	11/16 up .....	.85	.75	.70	.65	.60
PLUM—	Under 5/16 .....	.70	.60	.55	.50	.45
	5/16 to 7/16 .....	.75	.65	.60	.55	.50
	7/16 to 9/16 .....	.80	.70	.65	.60	.55
	9/16 to 11/16 .....	.90	.80	.75	.70	.65
	11/16 up	1.00	.90	.85	.80	.75
APRICOT—	Under 5/1670	.60	.55	.50	.45
	5/16 to 7/1675	.65	.60	.55	.50
	7/16 to 9/1680	.70	.65	.60	.55
	9/16 up85	.75	.70	.65	.60



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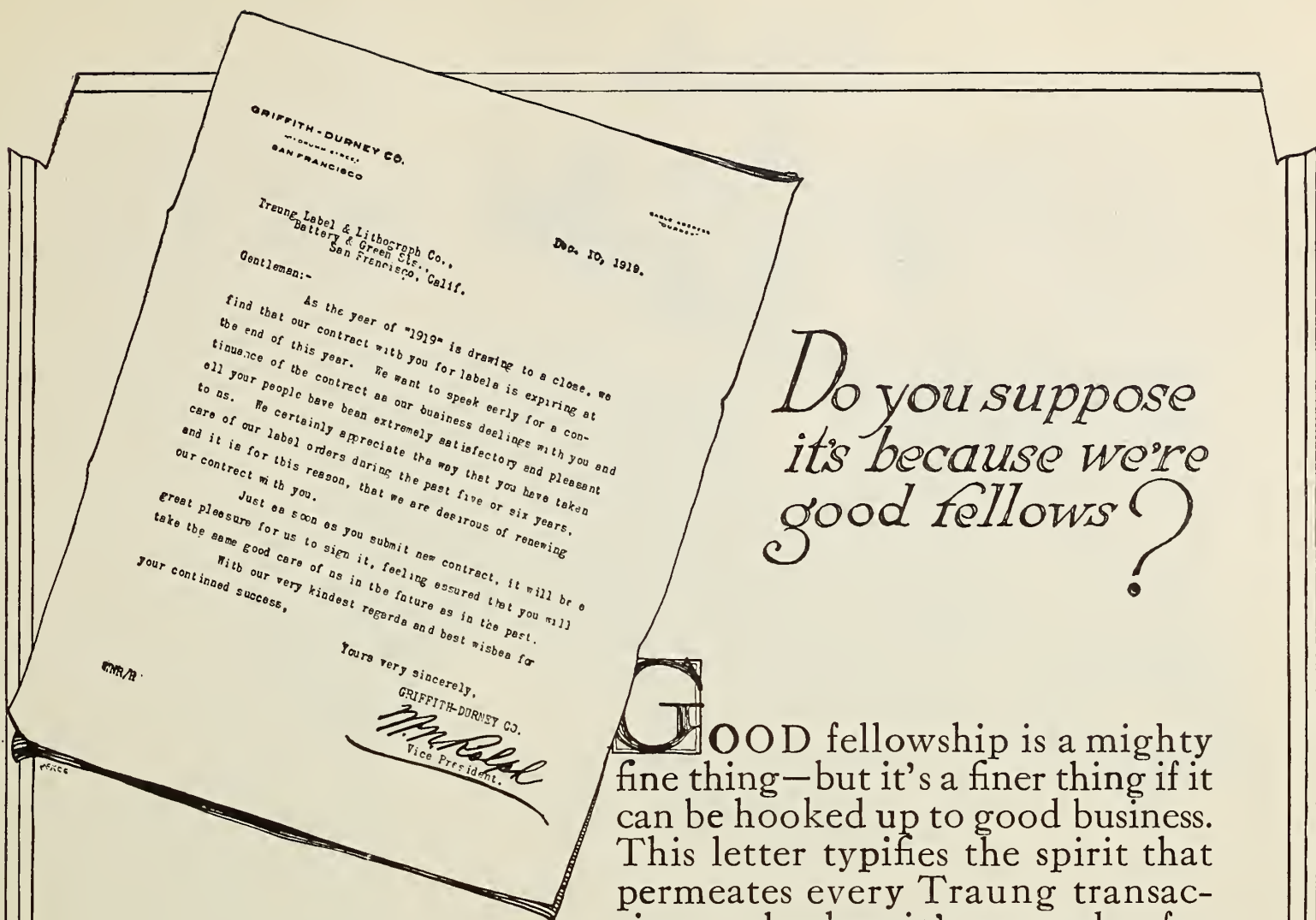
If you did not walk in the Thrift path this last year, set your feet in it for 1920.

The Thrift path may be a hard one, and a bit steep, but it leads to comfort, success, and strong moral character.

This bank will gladly help you get started.

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Each grower was checked up as to the amount of acreage to cover and equipment with which to do it. If the equipment, was not right, or was insufficient, he was advised to get the necessary equipment and in most cases followed the advice. Spray dates were determined and each grower was checked up on his methods of application. Special attention was given to each individual straight through the season. Attention was also given to thinning and picking off what first brood worms got by the early sprays.

The consequence is that Sunnyslope in 1919, instead of being the wormiest section in the district, is the cleanest of all the old infested areas. Worm infestation in Sunnyslope will not exceed 2 per cent for the whole community. There are a number of orchards in this section that will have scarcely a perceptible portion of 1 per cent infestation this year, and I do not know of a single orchard in the community that will exceed 5 per cent.

These growers are well pleased with the result, and while I have not made a careful canvass of the situation, a number of the growers have voluntarily told me that they want the service again next year.

Now, my idea is this. If we can reduce a whole community, of 1400 acres, from 20 per cent to less than 2 per cent infestation the first year, I am confident enough to believe that if we can carry the work on next year under the same conditions, we can reduce the worm infestation in Sunnyslope to a very small point and perhaps in the course of two or three years, practically exterminate the moth in this area. Such a thing is possible. British Columbia has proven and is proving that it can be done. Is it worth trying? I'll say it is, even if we should never reach the goal.

Let us see if this work as far as we have gone, has been profitable to Sunnyslope. As stated above, Sunnyslope took a loss of 20 per cent on a four hundred carload crop, which amounted to a loss in money to about \$100,000. In 1919, the loss was reduced to 2 per cent or a gain of 18 per cent over 1918. Sunnyslope produced this year seven hundred and fifty carloads of apples and 18 per cent gain on 750 cars of apples will amount to about \$200,000.

Codling moth control or extermination? Which?

If it be possible to exterminate the worms in a community of 1400 acres, the edges of that community can be continually pushed back, so that that area can be made continually larger. Other areas can be treated in the same way. There are no limits to the possibilities. It is possible to exterminate the worms from a whole country or even from a whole state if we become properly organized to do it.

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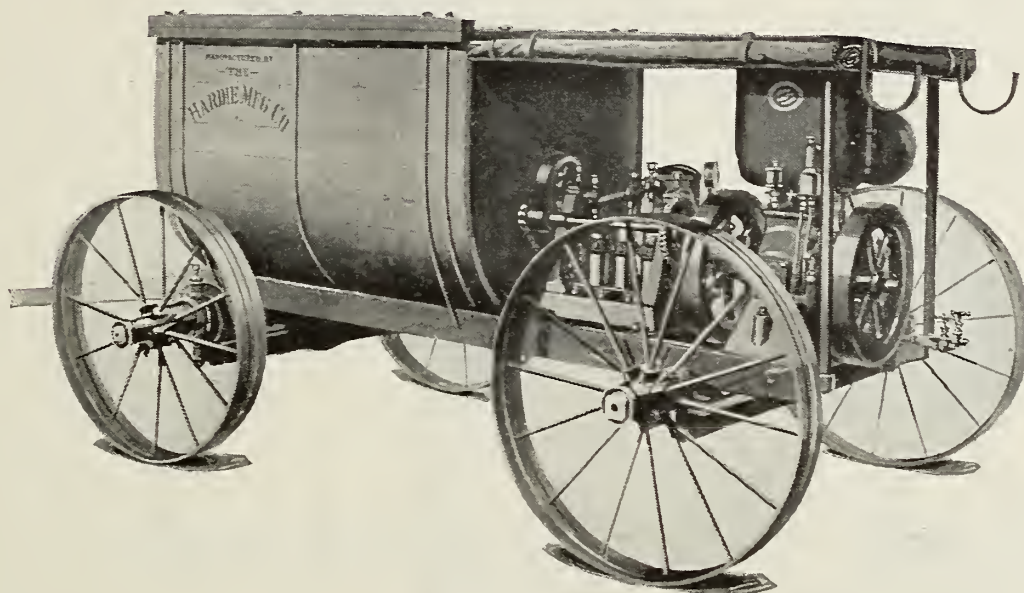
Nice Bright Western Pine FRUIT BOXES AND CRATES

Good standard grades. Well made. Quick shipments.
Carloads or less. Get our prices.

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Depending not on one feature alone, nor adaptable to only one class of growers, this machine will fit any orchard condition and meet any spraying problem.

Combined in this one machine is the ample capacity for rapid work, the uniform high-pressure which insures effectiveness, the under-slung truck enabling operation under adverse orchard conditions; plus a sturdiness that enables it to stand the strain of hard service for years.

It is first, last, and all the time your most powerful weapon in your fight against insect pests.

If you desire low operating costs, high speed work, and above all, the satisfaction of a clean, high-quality fruit crop

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Florida Establishing Blueberry Industry

From a Florida Correspondent

CULTIVATED blueberries as a crop for sections where the soil is extremely sour is the hope of exports of the United States Department of Agriculture, who have been working on the development of the blueberry plant for 10 years. It was found that blueberries cannot live in a well-balanced fertile soil, and that they are actually killed by the application of fertilizer which would be the best possible food for ordinary plants. In sections of the light soil regions where large quantities of lime are necessary to put the soil in condition for general farming, it is thought that this peculiar characteristic of the blueberry plants may make them a profitable cultivated crop.

Further work on the blueberry plant

includes breeding plants which bear fruit unusually large or of especially fine flavor.

The most extensive operation in cultivating the blueberry by private enterprise that has been made is taking place at Oldsmar, Florida.

In addition to becoming the Florida headquarters for the grape business, Oldsmar has already taken steps to become headquarters for cultivated and adapted native Florida huckleberries. Some of the specimens attain a height of fifteen feet and bear the most luscious berries, which can be shipped to Northern states without refrigeration.

The Carmen Grape Company has closed a contract which enables it to make this important announcement. It

has been preparing for this step for twelve years, and meanwhile the huckleberry stock has been cultivated to produce larger berries with improved flavor. The bushes produce one year after planting, without any sweetening of the soil being necessary; in fact, the berries do better in the natural soil. Fertilizer is not required at the start and if it is desired to renew the soil later on, this can be done by spreading decayed vegetable matter or muck on the land. Three acres planted 14x14 feet, produced \$605.85 last summer. The bushes can be planted 4x8, but the most profitable method is to plant the bushes in solid rows eight feet apart, and under such arrangement mature plants in good condition could produce as high as \$2,000 per acre.

Zimmerman Brothers of the Carmen Grape Company, Oldsmar, have bought up all the available plants and have the only nursery selling cultivated huckleberries and blueberries. They will plant a number of acres at Oldsmar, and expect this business to develop to be as big a proposition as the grape business. It has been thoroughly tried and tested, and is now a proven proposition. Agricultural experts from Washington have taken a deep interest in this work at Oldsmar and have expressed surprise and great satisfaction over the important progress made with this fruit. The leading varieties, which ripen from May to August, are the Florida highbush, Texas highbush, Rabbit eye and Oldsmar special. The sparkleberry ripens late in November.



LOTS of chores about the farm—up late and early—out in all sorts of weather. Farm folks need a food-drink like Ghirardelli's Ground Chocolate—delicious, rich, strengthening! A steaming cup of Ghirardelli's has saved many an exposure from developing into a serious illness. Made in a jiffy, too!

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In ½ lb., 1 lb. and 3 lb. sealed cans—
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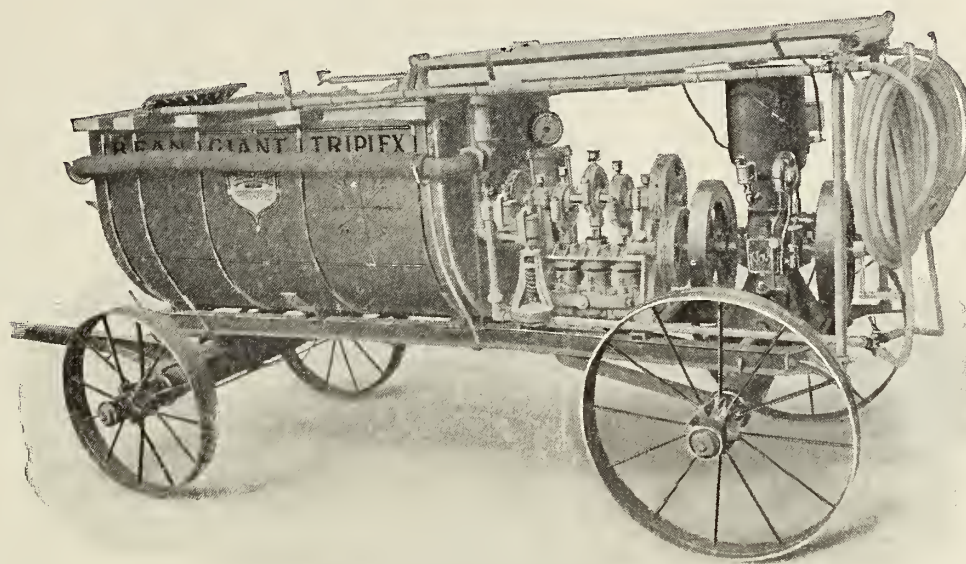
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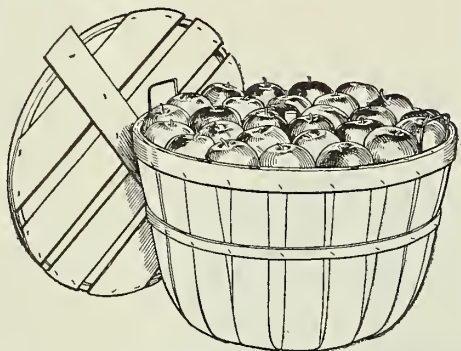
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This means quicker and easier sales. Further, it means your fruits and vegetables can be handled better, shipped better, stored better. All this means *bigger profits* for you.

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Final Estimate Apple Crop 26,174,000 Barrels

THE commercial apple crop for the United States is now estimated at 26,174,000 barrels by the Bureau of Crop Estimates, through its fruit crop specialists. This estimate is the final one of the season and indicates that the crop has overrun even the most liberal estimates, particularly in the far west. There has been an increase of 1,758,000 barrels over the November 1 estimate and this increase has occurred principally in the box apple district, although there has been a very considerable increase throughout some of the barreled apple sections, particularly Michigan and Arkansas. Arkansas, Washington, Oregon, Idaho and California have the largest crop in their history. The commercial crop of the United States as now estimated, ex-

ceeds last year's crop by 1,431,000 barrels.

It is now estimated that the far western or box apple states will produce 35,463,000 boxes, or an increase of 2,985,000 boxes over the November estimate, and 14,154,000 boxes over the crop of 1918.

The barrel apple states indicate a crop of 14,353,000 barrels, an increase of 763,000 barrels over the November estimate, or 3,287,000 barrels less than last year. The shipments from nearly all important sections with the exception of New York, have run heavier than last year. In addition, much more of the fruit is in storage at this time than at the same date last year.

Special Regional Report.

SPECIAL REGIONAL REPORT.

Region	Condition		Commercial Crop		% of last year
	Final 1919	Final 1918	Final 1919	Final 1918	
	%	%	Barrels	Barrels	
Western New York	27	75	1,728,000	4,800,000	36
Hudson Valley	60	37	1,050,000	647,000	162
Southern Ohio	23	72	184,000	558,000	33
Shenandoah-Cumberland District	45	65	1,980,000	2,600,000	76
Piedmont District	58	48	551,000	465,000	118
New England Baldwin Belt	72	43	1,120,000	645,000	174
Western Michigan	56	59	912,000	760,000	120
Western Illinois	30	50	300,000	500,000	60
Southern Illinois	27	20	405,000	300,000	135
Ozark Region (Southern Missouri and North-western Arkansas)	75	32	1,395,000	404,000	345
Missouri River Region	45	30	990,000	630,000	157
Arkansas River Region	45	42	135,000	123,000	110
Pacific Northwest	90	65	9,128,000*	5,037,000*	181
Colorado	64	43	828,000*	527,000*	157
California	98	79	1,511,000*	1,127,000*	134

*To reduce to boxes multiply by 3.

Are You the Man?

*If so, BETTER FRUIT offers you
a chance to make good money*

We want a representative in every fruit-growing community. In every such community there is some individual with a little time each month to spare, who, by representing BETTER FRUIT, can make a good income.

Perhaps it will be an elderly man?

A young fruit-grower just getting started?

A wife who wants to help out?

An ambitious boy or girl who wants to make extra money?

We want someone in *your* community to become our *permanent* representative—to secure new subscriptions for us and renew old ones.

We want two or three representatives in the Hood River Valley. Several in Yakima and Wenatchee—in the Willamette Valley, Rogue River, etc. In fact we want *permanent* representatives in every fruit district of the West.

Our proposition is a good one. Are you the man or woman for the job?

Write today, stating your qualifications.

BETTER FRUIT PUBLISHING COMPANY

OREGONIAN BUILDING, PORTLAND, OREGON

All the above figures both for states and regions, it should be understood apply to what is known as the commercial crop. That is, that part of the crop which is put up in barrels, boxes, or some other form of container, or that sold in bulk where some attempt is made at grading before the apples are put on the market for sale in the fresh state. It may be mentioned in this connection that while the commercial apple crop of the United States is 26,174,000 barrels as indicated, the total apple crop, that is to say, the total production, which includes all waste apples and those from home and farm orchards is estimated at 147,457,000 bushels or 49,152,000 barrels. Of this total apple crop about 15% or 7,373,000 barrels, goes to waste or is used on the farm; about 20% or 9,830,000 barrels, or approximately 713,000 tons, is made into by-products, the greatest per cent of which is cider. California, Western New York and a few other heavy producing centers, dry enormous quantities of apples. Canneries, vinegar factories, jelly factories, etc., also consume very large amounts. The remaining 65% of the total crop, or 31,949,000 barrels, is used for consumption as fresh fruit. Of these 31,949,000 barrels, however, it is estimated that but 26,174,000 barrels make up part of the crop which is not commercial, and which finds its way into local consumption from farm orchards, the fruit from which is of inferior quality and ungraded. Smaller towns in many of the eastern and middle western states consume a large portion of this grade of fruit.

Solving Fruit Growers' Problems

Continued from page 6.

through the purchase of orchard supplies and in production activities of various kinds, such as the use of tractors, in pruning, fumigation and harvesting. It should reduce the cost of packing by the purchase of packing house supplies and by coöperative packing; it should reduce the cost of distribution to the wholesale trade, and by even distribution and national advertising it should help place the wholesale and retail distribution of fruit on a merchandising rather than a speculative basis, thereby reducing the distributing costs of the trade to the consumer. These are public relationships that should be inherent in the legal right of producers to organize. They are responsibilities which no coöperative organization can safely avoid."

Details of the Organization.

The California Fruit Growers' Exchange is a non-capital, non-profit association of 11,000 growers of citrus fruits who provide the facilities through which their fruit may be sold at cost to the wholesale trade. There are 196 associations of growers in the Exchange, representing three-fourths of the citrus fruit of the state. An association builds a packing house, harvests the fruit of its members, assembles it in the packing house and there grades and packs it in accordance with the rules of the Exchange. These associations are financed by the growers and are operated exclusively for them. They are managed by a board of directors through a salaried manager. The cost of the packing houses varies from \$20,000 to \$250,000 or more.

The associations of a community federate into a non-profit district exchange, with a director from each. The district exchange acts as a clearing house between the associations and the California Fruit Growers' Exchange in handling the marketing problems of the associations. There are twenty of these district exchanges. Its business is handled through a manager. The California Fruit Growers' Exchange is formed by the district exchanges, with a director representing each district exchange.

The Exchange furnishes the facilities through which the fruit of the growers is sold on a delivered basis except in a few pocket markets.

In 1919 the Exchange growers sold \$75,000,000 worth of citrus fruits to the wholesale trade, which returned \$55,000,000 to California. The cost of the Exchange, including the district exchange sales service, was 5.2 cents per box, or 1.04 per cent of the delivered value. In addition, there was invested in national advertising and trade promotion \$500,000, making a total sales and advertising expense of 1.62 per cent of the delivered value of the fruit. Due to the increased volume of business handled, the Exchange selling cost, including advertising, was lower in 1919 than ten years ago.

During the last sixteen years there has been returned to California through the Exchange \$317,000,00. The losses from all causes during this time in dealing with 3,000 or more wholesale merchants have been approximately \$8,000, or $\frac{1}{400}$ of 1 per cent of the f.o.b. returns.

The Fruit Growers' Supply Company.

The Fruit Growers' Supply Company, which handles the purchases of orchard and packing house supplies for the Exchange growers, owns 65,000 acres of timber lands and operates mills and factories for lumber and box making. It has an authorized capital stock of \$1,500,000, which it is increasing to \$4,000,000, owned and contributed exclusively by the members. In 1919 the Fruit Growers' Supply Company transacted a business of \$6,200,000 in packing house and orchard supplies at an operating cost of \$1.10 per \$100.00 of value on purchases, and after paying 6 per cent on the capital invested, refunded \$525,000 to its members, in proportion to the purchases of each.

WANTED

to rent or lease, an improved orchard farm by party having both practical experience and technical training. Best of references furnished.

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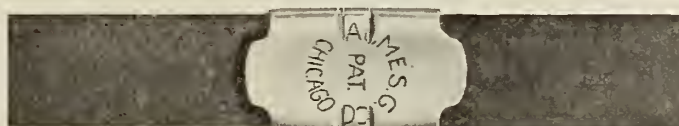


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Orchard Brand Dry Powdered Arsenate of Lead

CODLING moth and other insects obtain their food by eating the fruit. To prevent that loss we have manufactured Orchard Brand Dry Powdered Arsenate of Lead. It also prevents injury to foliage by chewing insects.

The superior mechanical process by which it is made, and its chemical purity, gives the maximum concentration. It is so finely divided that it mixes readily with water, and remains in good suspension in the spray tank. When properly applied it spreads evenly and uniformly over the surface of fruit and foliage. It does not collect in splotches, but gives the greatest protection.

After years of experience in the orchards of the Pacific Coast, constant research and laboratory tests Orchard Brand Dry Powdered Arsenate of Lead is recommended as the most effective poison obtainable.

Complete chemical investigations, and trained workers in many actual field tests have proved its efficacy.

Practical fruit growers and experienced entomologists alike commend Orchard Brand Dry Powdered Arsenate of Lead for its uniformity, high concentration, spreading ability, adhesive and lasting qualities. It has proved satisfactorily effective under all conditions.

It is packed in 200-lb. and 100-lb. drums, 50-lb. and 25-lb. packages, 4-lb. and 1-lb. cartons, all net weight.

Other tree sprays we make are: Orchard Brand Arsenate of Lead Paste; Atomic Sulphur; Bordeaux Mixture, Paste; Bordeaux Mixture, Powdered; Lime Sulphur Solution; B T S Dry Sulphur Compound; Weed Killer; Universal Brand Dormant Soluble Oil; Crude Oil Emulsion; Miscible Oil No. 1; Miscible Oil No. 2; Distillate Oil Emulsion; Liquid Whale Oil Soap, and Black Leaf "40."

Write us about your tree troubles. The best available information will be sent in reply.



General Chemical Company

710 Royal Insurance Building
San Francisco, California

Fruitmen Discuss Production

Continued from page 10.

opener to the deciduous fruit growers of the Northwest, while the statements of Professor C. I. Lewis, Organization Manager of the Oregon Growers Coöperative Association telling what the Oregon growers were doing in the way of forming a state wide organization to pack, market and process fruits and their by-products proved an added stimulus to the coöperative spirit.

Sidelights On Cultural Methods.

Among the subjects that deeply interested the conference was that of the extermination of the codling moth as advocated by P. S. Darlington, district horticultural inspector at Wenatchee, which is published elsewhere in this issue. New experiments that promise to give more effective worm control as explained by Prof. A. L. Lovett of the Oregon Agricultural College were also of much interest.

In the matter of applying sprays the spray gun had many friends among those at the meeting. Apart from being championed by a number of growers, Leroy Childs, horticulturist at the experiment station at Hood River, showed that experiments there had demonstrated a high degree of efficiency for the gun.

The more general use of oil sprays was advocated by Prof. A. L. Melander who believes that they are capable of a high degree of control of the various pests. Lee N. Hutchins of the bureau of plant disease investigations of the United States Agricultural Department in discussing collar rot which has appeared in some of the Northwest orchard districts said the only remedy given for this trouble was to cut out the diseased spots and paint them with coal tar diluted with creosote.

The advocacy of keeping livestock in an orchard did not meet with a warm welcome by the conference except from J. R. Everett, manager of the Boston-Okanogan Orchards Company, which has a large acreage in trees and other crops, making it possible for this company to pasture the stock in other fields during the period when the fruit is making its greatest growth. The experiences of other orchardists was to the effect that the stock injured the trees and were an expense rather than a profit.

To secure better pollination Prof. C. C. Vincent, horticulturist at the University of Idaho, advised the keeping of bees in an orchard at a ratio of one hive to the acre.

Banking and Transportation.

W. S. Peachy, Vice President of the Seattle National Bank and J. J. Rouse, Cashier of the Fidelity National Bank of Spokane, handled the topics of financial interest, the former stating that organized coöperation was a big asset to the fruit grower in getting help from the banker, and the latter advising the fruit grower not to forget the rainy day and to place his present profits in investments that will be of help to him in future. F. W. Graham of the Great

Northern Railway, in discussing transportation problems wanted the growers to build more warehouses in order to relieve car shortages, and the growers were of the opinion that the railroads should build more cars. The advice of S. M. McKee of Selah, Wash., was to the effect that a by-product plant is the necessary adjunct to every fruit raising community. With every part of cull apples from the core to the peeling being used and paid for at \$15 per ton, Mr. McKee said that the by-product plant was a big source of income to the grower. Results of apple breeding work at the University of Idaho discussed by L. E. Longley; enlarging the markets for western fruit through national advertising as set forth by Prof. H. J. Eustace, western publicity manager for the Curtis Publishing Company, and orchard tillage discussed by Ralph Sandquist of Selah, Wash., all proved interesting.

Patriotism Rules at Banquet.

The arrangements for the four day's sessions which were largely in the hands of M. L. Dean, horticulturist of the Washington State Department of Agriculture and W. P. Romans of the Spokane Chamber of Commerce were admirably conducted. During their visit the fruitmen were the guests of the Chamber of Commerce and Ad Club at luncheons and on the last evening of the conference were entertained with a banquet.

On this occasion, at which E. B. Benson, Washington State Commissioner of Horticulture acted as toastmaster, 100 per cent Americanism was the dominating theme of the speakers. In the opening talk made by Commissioner Benson he urged the fruit growers of the Northwest to get together on all their problems and to abolish sectional lines for their common welfare. The principal addresses were made by E. H. Lindley, President of the University of Idaho and Dr. E. O. Holland, President of Washington State College. The other speakers were H. A. Lyon of the Idaho Bureau of Markets, representing the governor of Idaho; President E. T. Coman of the Exchange National Bank; L. C. Taylor of Kelowna, B. C.; John A. Gellatly of Wenatchee, and F. A. Wiggins of Toppenish.

Spokane was again selected as the place for the next annual meeting of the State Horticultural Association with the provision for a summer meeting to be held at Wenatchee. The new officers of the association are: President, H. D. Bohlke, Dryden; Secretary, M. L. Dean, Olympia; First Vice-President, F. A. Wiggins, Toppenish; Second Vice-President, S. H. Kipp, Quincy; Trustees for two-year term, Dr. Geary, Underwood and J. R. Schwartze, Yakima; Trustees for three-year term, A. G. Craig, Spokane, and M. L. Dean, Olympia.

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Why One Apple Leads the World

GROWERS of America's proudest fruit production—the great red Stark Delicious Apple—are banking truly amazing crop profits these days.

Chris. Ringhausen, the Calhoun Co., Ill., orchardist, got \$60,000 for his apple crop this last season. Thirteen acres of Stark Trees yielded Harry Carroll, Clarksville, Mo., over \$3,000 for one crop.

Garland J. Hopkins, owner of the Garland Orchards in Virginia, reports \$40,000 for one crop from thirty acres of Stark Trees—and the ground that these trees were planted in was

so poor that it wouldn't raise twenty bushels of corn to the acre!

From wind swept Nebraska comes this report, "Have sold \$1,000 worth of apples from an acre of trees—all Stark Trees from your nursery. Stark Delicious sold at the top price." —Chas. S. Ludlow, Red Cloud, Nebraska. Growers in every state send in similar enthusiastic reports.

Everywhere you go you will find Stark Delicious Apples the first choice of apple lovers, the apples for which highest prices are readily paid on every market.



Stark Delicious



Stark Bro's Greatest Red Apple

*Stark Delicious
Apple
Natural Size*



Have you ever "sampled" a big, red Stark Delicious Apple? It's a great big, flashing, waxen-red beauty, with crisp, tender flesh of exquisite juiciness and flavor. It possesses a sparkling zest all its own. Its aromatic flavor is so refreshing—its flesh so meltingly tender and so packed with mouth-watering juice that all you can think of when you have finished eating one is, "Give me another."

This apple's strong skin, sound flesh, immunity from bruise and rot, and ability to hold its alluring flavor and aroma during months of storage have earned for the Stark Delicious the top reputation as a long keeper and a top-market price apple that will safely undergo long distance shipments. On **every** market, every year, it outsells all others. It originated in Iowa and has proved remarkably hardy and disease resistant throughout the world.

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G. F. Cadwell & Son, owners of an 800-acre orchard at Griggsville, Ill., recently bought 160 additional acres, which they will plant to Stark Trees. As Mr. Cadwell said: "It may be just bare, run-down land now, but when it has a Stark Tree orchard growing on it I will refuse \$1,000 per acre for it. Why, the crops I have taken off in the past several years have totaled over \$2,000 per acre. Just last year I got over 10,000 barrels (net market price of No. 1 apples was \$9.00 to \$15.00 per barrel) from 50 acres!"

Learn about Stark's Golden Delicious Apple, too. The wonder of all golden apples—flavor cross between Grimes and Stark Delicious. Larger and finer in flavor than Grimes. Keeps 4 months longer. Possesses all of Grimes Golden good points and none of its weaknesses. Read all about it in 1920 Year Book, "Prize Fruits."

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